



# **User's Guide**

**HP Vectra VL**

**5/xxx**

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# --- User's Guide

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## Who this Manual is For

This manual is for anyone who wants to:

- Set up the PC for the first time
- Configure the PC
- Add accessories to the PC
- Troubleshoot problems on the PC
- Find out where to get more information and support.

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## Important Safety Information

If you have any doubt that you can lift the PC or display safely, do not try to move it without help.

For your safety, always connect the equipment to a grounded wall outlet. Always use a power cord with a properly grounded plug, such as the one provided with this equipment, or one in compliance with your national regulations. This PC is disconnected from the power by removing the power cord from the power outlet. This means the PC must be located close to a power outlet that is easily accessible.

For your safety, never remove the PC's cover without first removing the power cord from the power outlet, and any connection to a telecommunications network. Always replace the cover on the PC before switching it on again.

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### ***WARNING***

To avoid electric shock, do not open the power supply.

This HP PC is a class 1 laser product. Do not attempt to make any adjustment of the laser units.

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## Important Ergonomic Information

It is strongly recommended that you read the ergonomic information before using your PC.

For Windows 95 users, open the Start menu in the task bar and select Help. Then double-click on the help topic “Working in Comfort”.

For Windows for Workgroups (Windows 3.11) users, open the Program Manager, open the program group “HPUtils”, and double-click on the “HP User Tools” icon. Then click on “Working in Comfort” in the page tagged “Information”.



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## Contents

### 1 Setting Up and Using Your PC

Unpacking Your PC .....	2
Connecting the Mouse, Keyboard, Display and Printer .....	3
Connections for Models with Integrated Video Display. ....	3
Connections for Models with MGA Millennium Video Board. ....	4
Connecting Audio Accessories .....	5
Connecting the Power Cables .....	6
Starting and Stopping Your PC. ....	7
Starting Your PC. ....	7
Starting the PC for the First Time .....	8
Stopping Your PC. ....	10
Setting Passwords .....	11
Setting an Administrator Password .....	11
Setting a User Password .....	12
Using Power Management .....	13
Additional Information and Help. ....	13

### 2 How to Install Accessories In Your PC

Accessories You Can Install .....	16
Removing and Replacing the Cover .....	17
Removing the Cover. ....	17
Replacing the Cover after Installing Accessories. ....	17

Removing the Air Flow Guide .....	18
Installing Memory.....	19
Installing Main Memory.....	19
Installing a Video Memory Upgrade (Integrated Video Models) .....	21
Upgrading the MGA Millennium Board Memory .....	23
Installing Mass Storage Devices.....	25
Installing an Additional Hard Disk Drive .....	28
Installing a Flexible Disk Drive, CD-ROM Drive, or Tape Drive .....	30
Installing Accessory Boards .....	32
Configuring Accessory Boards with Plug and Play .....	32
Configuring non-Plug and Play ISA Accessory Boards .....	32
Installing the Board.....	33
Installing an OverDrive Processor.....	35
 <b>3 Troubleshooting Your PC</b>	
Solving Problems .....	38
HP Summary Screen .....	38
If Your PC Does Not Start Properly .....	39
Display is Blank and There Are No Error Messages .....	39
If You Cannot Start Your PC from a Modem .....	41
If a POST Error Message is Displayed .....	41
If You Cannot Turn Off Your PC .....	43
If Your PC Has a Hardware Problem .....	43



Display Does Not Work Properly . . . . .	43
If Your Keyboard Does Not Work . . . . .	45
If Your Mouse Does Not Work . . . . .	45
If Your Printer Does Not Work. . . . .	46
If the Flexible Disk Drive Does Not Work. . . . .	47
If the Hard Disk Does Not Work . . . . .	48
If the CD-ROM Drive Has a Problem. . . . .	49
If an Accessory Board Does Not Work . . . . .	50
<b>If Your PC Has a Software Problem . . . . .</b>	<b>51</b>
If You Have Forgotten Your Password . . . . .	51
If Your Application Software Does Not Work . . . . .	52
If the Date and Time are Incorrect . . . . .	52
<b>If You Have a Network Problem . . . . .</b>	<b>52</b>
<b>If Your PC Has an Audio Problem . . . . .</b>	<b>53</b>
<b>Changing the Battery. . . . .</b>	<b>55</b>
<b>Technical Information. . . . .</b>	<b>57</b>
System Board Switches . . . . .	57
Power Consumption. . . . .	58
IRQs, DMAs, and I/O Addresses Used by Your PC . . . . .	59
Integrated Video Graphic Information . . . . .	60
<b>HP Setup Program. . . . .</b>	<b>60</b>
 <b>4 Hewlett Packard Support and Information Services</b>	
Introduction . . . . .	62

Your HP Authorized Reseller . . . . .	63
HP SupportPack . . . . .	63
HP Support Assistant CD-ROM . . . . .	64
Hewlett-Packard Information Services . . . . .	65
HP Forum on CompuServe . . . . .	65
HP Forum on America Online . . . . .	66
HP BBS Library . . . . .	67
HP World Wide Web Site . . . . .	67
HP FAXback on Demand—HP FIRST . . . . .	68
HP Audio Tips (USA only) HP Automated Support Directory . . . . .	68
Ordering Drivers and BIOS on Diskette . . . . .	69
HP Support Services . . . . .	70
Hewlett-Packard Telephone Support . . . . .	71
Lifeline Telephone Support . . . . .	72
HP Network Phone-in Support Service (NPS) . . . . .	73
Summary . . . . .	74
Hewlett-Packard Marketing Headquarters . . . . .	75
 <b>Glossary . . . . .</b>	 <b>77</b>
 <b>Index . . . . .</b>	 <b>81</b>

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## Setting Up and Using Your PC

## 1 Setting Up and Using Your PC

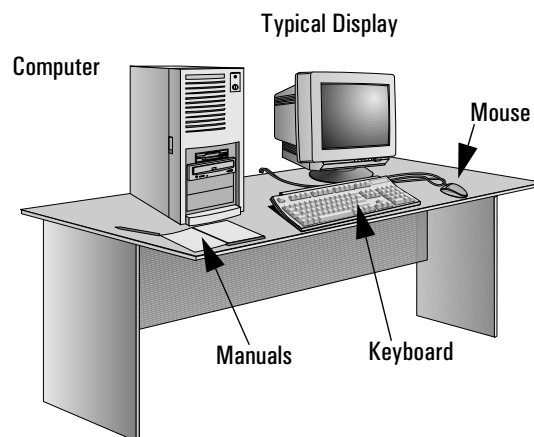
### Unpacking Your PC

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**WARNING**

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If you have any doubt that you can lift the PC or display safely, do not try to move it without help.



- 1 When you receive your PC, unpack all the components.
- 2 Place the PC on a sturdy desk near to easily accessible power outlets, with enough space for the keyboard, mouse, and any other accessories.
- 3 Position the PC so that its rear connectors are easily accessible. (You can place the PC on the floor instead of on the table, if desired.)
- 4 Refer to the display's manual for information about the display.

Operating System      Your PC's operating system is preloaded on your PC's hard disk drive.

Installation Tools      No tools are required to set up your PC. However, if you plan to install a disk drive or an accessory board in your PC, you will need a flat-blade screwdriver. For further information about installing accessories, refer to chapter 3, *"How to Install Accessories In Your PC"*.

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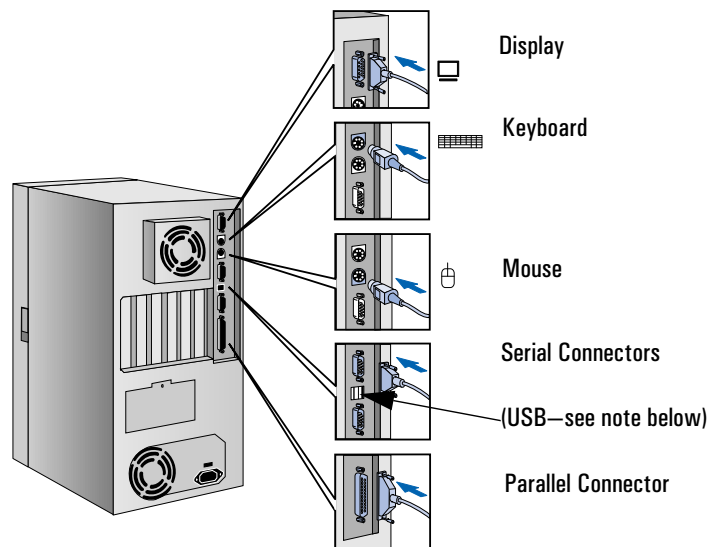
## Connecting the Mouse, Keyboard, Display and Printer

Connect the mouse, keyboard, and display to the back of the computer. *The connectors are shaped to go in one way only.* Tighten the display cable attachment screws.

Connect the printer cable to the back of the computer and tighten the attachment screws. Use the connector labeled:

- Parallel (25-pin parallel connector) for a parallel device
- Serial A (9-pin serial connector) for a serial device
- Serial B (9-pin serial connector) for a second serial device.

### Connections for Models with Integrated Video Display



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#### NOTE

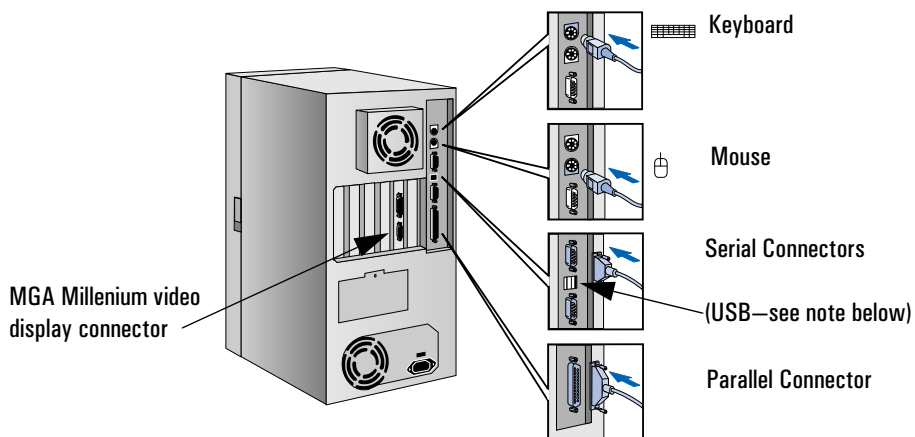
The Universal Serial Bus (USB) connectors are between the serial connectors and can be used for USB accessories. Most USB accessories are automatically configured as soon as they are physically attached to the PC. USB is not supported by all operating systems. If the USB drivers are not available on your PC, they can be obtained from HP's electronic services.

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## 1 Setting Up and Using Your PC

Connecting the Mouse, Keyboard, Display and Printer

### Connections for Models with MGA Millennium Video Board



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#### **NOTE**

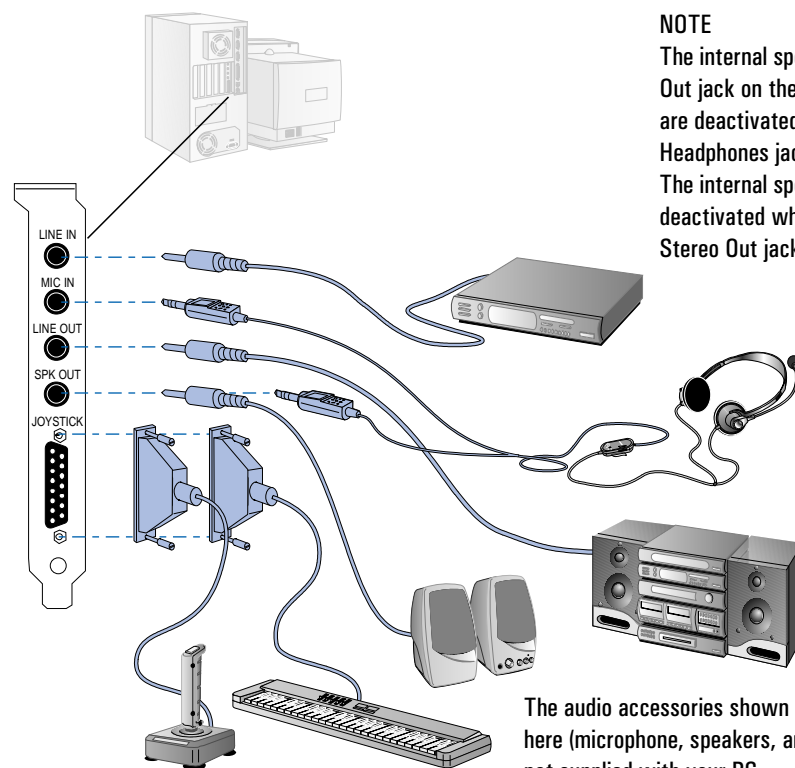
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## Connecting Audio Accessories

If your PC comes with multimedia capabilities, it will have a Headphones jack and a Microphone jack on the rear panel. An audio Line In jack, an audio Line Out jack, and a MIDI interface connector are also located on the rear panel.



### NOTE

The internal speaker and the Line Out jack on the rear of your PC, are deactivated when you use the Headphones jack.

The internal speaker is deactivated when you use the Stereo Out jack.

The audio accessories shown here (microphone, speakers, and hifi system) are not supplied with your PC.

---

### **WARNING**

To avoid discomfort from unexpected noise, always turn the volume down before connecting headphones or speakers.

Listening to loud sounds for prolonged periods may permanently damage your hearing. Before putting on headphones, place them around your neck and turn the volume down. When you put on the headphones, slowly increase the volume until you find a comfortable listening level, and leave the volume control in that position.

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## 1 Setting Up and Using Your PC

### Connecting the Power Cables

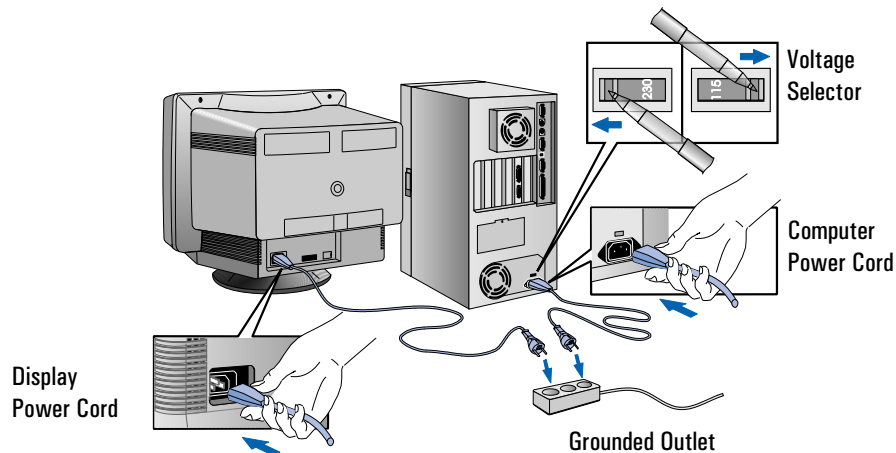
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#### **WARNING**

For your safety, always connect the equipment to a grounded wall outlet. Always use a power cable with a properly grounded plug such as the one provided with this equipment or in compliance with your national regulations. This PC is disconnected from the power by removing the power cable from the power outlet. This means the PC must be located close to a power outlet that is easily accessible. This PC is a class 1 laser product.

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- 1 Remove the warning label covering the computer's power connector at the rear of the computer.
- 2 Check that the correct voltage is selected for your country. (The voltage is set during manufacture, and should be already correct.)



- 3 Connect the power cables to the display and the computer. (The connectors are shaped to go in one way only.)
- 4 Connect the display's power cable and the computer's power cable to grounded outlets.



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## Starting and Stopping Your PC

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### **NOTE**


If you are starting your PC for the first time, refer to "Starting the PC for the First Time", on page 8. To stop your PC, refer to "Stopping Your PC", on page 10.

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### Starting Your PC

- 1 Before you start your PC, first switch on the display.
- 2 Start your PC in one of these ways:
  - press the power button on the front panel
  - press the space bar.

When you switch on the computer, the computer carries out the Power-On-Self-Test (POST) while the Vectra logo is displayed. If you wish to view the POST details, press  to get the HP Summary Screen. If there is an error in the POST, the error will automatically be displayed. For details, refer to "HP Setup Program", on page 60.

- 3 If you have set a password in the PC's *Setup* program, the password prompt displays after the POST has completed. If the Password prompt is displayed, type your password and press  to be able to use the PC.

## 1 Setting Up and Using Your PC

### Starting and Stopping Your PC

#### Starting the PC for the First Time

If your PC has preinstalled software, it is initialized the first time you start the PC. The software initialization process takes approximately three minutes. This process sets up the software in your language and sets up your software to use the hardware installed in your computer (you can change the settings after the software has been initialized).

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**CAUTION**

You may also be asked to select which operating system you want to use, for example Windows 3.11 or Windows 95. Once you have confirmed your selection of the operating system, you **cannot** change that selection. The operating system that you have **NOT** chosen will be deleted from the computer's hard disk

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#### Initializing Your Software

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**NOTE**

Do NOT switch OFF the PC while the software is being initialized—this could cause unexpected results.

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To initialize your software:

- 1 Turn on the display first, and then the PC.

When the PC is switched on, the Vectra Logo is displayed. The PC performs a Power-On-Self-Test (POST). Press **[Esc]** if you want to view the POST details in the HP Summary Screen (refer to the "HP Setup Program", on page 60).

If an error is detected during the Power-On-Self-Test, the PC will automatically display the error. You may be prompted to press **[F2]** to start the *Setup* program to correct the error.

- 2 The software initialization routine starts. It displays the software license agreement, gives you an opportunity to read Working in Comfort (ergonomic advice for computer users), and then asks questions about the PC. For example:
  - The name of the person who will use the PC and your company name. (If necessary, the name of the user can be modified later.)
  - The current date and time.
  - The type of printer (for example, HP LaserJet 4M). This is shown on the front of the printer. You also need to enter the connection used by the printer.
  - The model number of your display. The display's model number is shown on the cover of the manual supplied with the display and on a label on the rear of the display.
  - Depending on which model PC you have, you may also be asked to select which operating system you want to use, Windows 3.11 or Windows 95. Once you have confirmed your selection of the operating system, you **cannot** change that selection. The operating system that you have **NOT** chosen will be deleted from the computer's hard disk
- 3 While the initialization program is running, you can complete the Warranty Registration card that you will find inside the back of this manual. When the initialization routine has finished, click on OK and the PC will restart.

#### After Your PC Has Restarted

- ☐ Set the keyboard to a comfortable position.
- ☐ Adjust the display screen's brightness and contrast to suit your needs. If the picture does not fill the screen or is not centered, adjust it using the controls on the display. Refer to the display's manual for details.

## **1 Setting Up and Using Your PC**

### **Starting and Stopping Your PC**

#### **Creating Master Diskettes**

It is very important that you create master diskettes for your preloaded software as soon as possible. HP recommends that you use new diskettes. If you need to restore the preloaded software on your PC, you can use these diskettes to do so.

For details on how to create these diskettes, refer to the documentation for your operating system.

#### **Stopping Your PC**

To stop the PC, make sure that you have exited all programs and the operating system (if necessary), and then press the power button on the control panel.


Refer to the operating system manual for details of how to exit the operating system.

---

## Setting Passwords

You can set two passwords, the administrator password and the user password, to provide two levels of protection for your PC. You set both passwords in the Security menu group of the *Setup* program.



### Setting an Administrator Password

Set the Administrator Password to protect the PC's configuration in *Setup*. An Administrator Password can provide a power-on password prompt to prevent your PC being started or used in your absence. You can also use this password to start the PC when the keyboard (and mouse) are locked—you must type the password and press  to unlock the keyboard (refer to "Power-On Password" in the HP *Setup* program—see "HP Setup Program", on page 60).

If you have set both an Administrator Password and a User Password, and you enter the *Setup* program by using the User Password, you will be restricted in your ability to change setup items. If you enter the *Setup* program with an Administrator Password, you will have no restrictions.

To set an Administrator Password:

- 1 Start the Setup Program. Refer to "HP Setup Program", on page 60.
- 2 Select the Security menu group.
- 3 Select the "Administrator Password" submenu.
- 4 Choose the "Set Administrator Password" setup item. You will be asked to enter your password twice. Be sure to save your changes before you exit the *Setup* program.

To remove the password, follow the same procedure as to set a password, but do not enter anything in the password field. Press  and then press  a second time to confirm your action.

---

#### NOTE

If you forget your password, refer to "If You Have Forgotten Your Password", on page 51.

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## 1 Setting Up and Using Your PC

### Setting Passwords

#### Setting a User Password

A user password can only be set if an Administrator Password has already been set.



Set a User Password to:

- provide a power-on password prompt to prevent your PC being started or used in your absence
- start the PC when the keyboard (and mouse) are locked—you must type the password and press  to unlock the keyboard (refer to "Power-On Password" in the HP *Setup* program—see "HP Setup Program", on page 60).

If you have set both an Administrator Password and a User Password, and you enter the *Setup* program by using the User Password, you will be restricted in your ability to change setup items. If you enter the *Setup* program with an Administrator Password, you will have no restrictions.

To set a User Password:

- 1 Start the Setup Program. Refer to "HP Setup Program", on page 60.
- 2 Select the Security menu group.
- 3 Select the "User Password" submenu.
- 4 Choose the "Set User Password" setup item. You will be asked to enter your password twice. Be sure to save your changes before you exit the *Setup* program.

To remove the password, follow the same procedure as to set a password, but do not enter anything in the password field. Press  and then press  a second time to confirm your action.

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#### **NOTE**

If you forget your password, refer to "If You Have Forgotten Your Password", on page 51.

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## Using Power Management

Power management enables you to reduce the PC's power consumption when you are not using the PC. To configure power management, refer to "Power-On Password" in the HP *Setup* program—see "HP Setup Program", on page 60.

Refer to your operating system documentation for detailed information about the capabilities of your operating system to implement power management.

This PC's power management complies with the Energy Star Computers Program initiated by the United States Environmental Protection Agency.

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## Additional Information and Help

Additional information about your PC is preloaded on your PC's hard disk drive. This information includes:

- New features—what is new and special about your PC
- Using your PC—simple, "how-to-use" guidelines about using your PC
- Working in comfort—guidance on ergonomic issues
- Inside your PC—describes the basic parts of your PC, how to upgrade, and how to optimize performance
- HP support—similar to chapter 4 in this User's Guide
- Glossary.

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### **NOTE FOR WINDOWS 95 USERS**

Ensure that you use the software drivers provided with the preloaded operating system. If you do not use the preloaded operating system, you can download the HP-qualified drivers from the HP World Wide Web site (refer to page 67). Using the HP-qualified IDE drivers avoids the "PCI Error" message caused by older versions of Windows 95.

## **1 Setting Up and Using Your PC**

Additional Information and Help



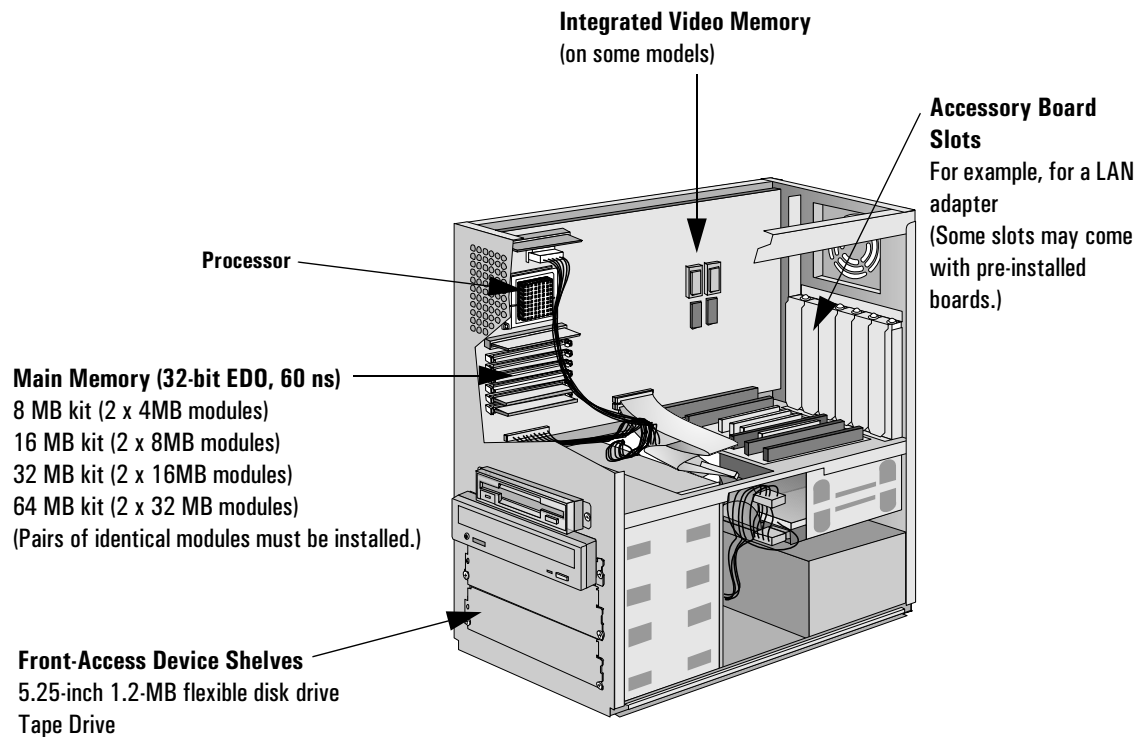
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## How to Install Accessories In Your PC

This chapter explains how to install accessories, such as extra memory, accessory boards, and additional disk drives, in your PC.

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## Accessories You Can Install



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## Removing and Replacing the Cover

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### ***WARNING***

For your safety, never remove the PC's cover without first removing the power cord from the power outlet, and any connection to a telecommunications network. Always replace the cover on the PC before switching it on again.

---

### Removing the Cover

- 1 Switch off the display and computer.
- 2 Disconnect all power cables and any telecommunications cables.
- 3 If necessary, unlock the cover using the key on the front panel.
- 4 Lift the two latches on the front sides of the computer upwards. Slide the cover forwards and off the computer.

### Replacing the Cover after Installing Accessories

- 1 Ensure that you have installed all your accessories and that all internal cables are properly connected and safely routed.
- 2 Ensure that the two latches on the front sides of the cover are upwards, and that the lock is unlocked.
- 3 Slide the cover onto the computer, making sure that the two guides at the bottom of the case slide into the two rails at the base of the computer. Firmly slide the cover backwards into position.
- 4 Lower the two latches on the front sides of the cover.
- 5 If required, lock the cover using the key provided.
- 6 Reconnect all the power cables.

## 2 How to Install Accessories In Your PC

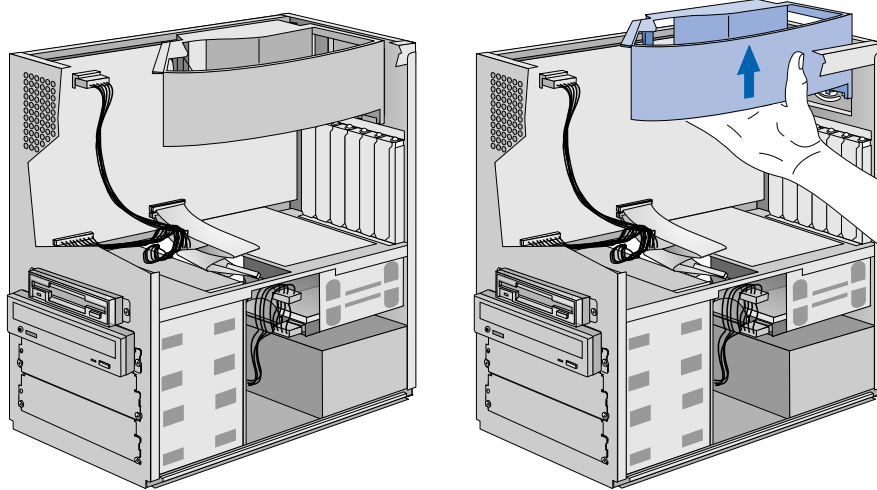
### Removing the Air Flow Guide

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## Removing the Air Flow Guide

Your PC has an air flow guide to help reduce the heat of the processor. You must remove this guide before you can access the processor, the system board switches, the battery, or any accessory board.

To remove the air flow guide, unclip it from the side of the PC after you have removed the cover.



**NOTE:**

The air flow guide on your PC may be different from the one shown in this illustration.

---

## Installing Memory

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### **CAUTION**

Static electricity can damage electronic components. Turn all equipment OFF. Don't let your clothes touch the accessory. To equalize the static electricity, rest the accessory bag on top of the PC while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.

---

### Installing Main Memory

Your PC is supplied with main memory. If you need more main memory to run your application software, you can install up to a total of 192 MB (6 x 32 MB).

Main memory is available in modules of 4 MB, 8 MB, 16 MB, or 32 MB. There are three memory "banks", with each bank requiring two memory modules. You must install identical modules as pairs in each bank.

Bank <sup>1</sup>	Memory Modules You can Install
A1 and A2	Comes preloaded with either 16 MB (2 x 8 MB) or 32 MB (2 x 16 MB).
B1 and B2	Any pair of identical modules.
C1 and C2	Any pair of identical modules.

1. The letters "A", "B", and "C" are used for reference only in this manual. These letters do not appear on the system board. The bank identified here as "C" is the one closest to the processor.

---

### **NOTE**

Best performance is achieved if you install memory in bank "A" first, then bank "B", and in bank "C" last.

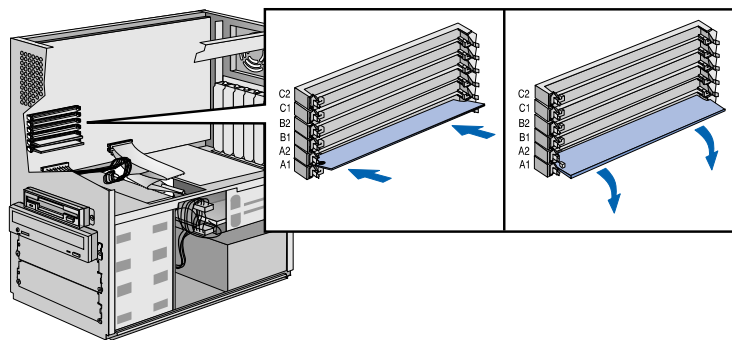
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## 2 How to Install Accessories In Your PC

### Installing Memory

To install a main memory module:

- 1 Disconnect the computer's power supply cord and any connection to a telecommunications network.
- 2 Remove the computer's cover.
- 3 Remove the airflow guide (refer to page 18).
- 4 Align the memory module with the slot, with the notch on the right hand side. For each memory module, slide it into the slot at 45°. Pivot the memory module to a perpendicular position and click into place.



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#### NOTE

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The letters “A”, “B”, and “C” are used for reference only in the above illustration. These letters do not appear on the system board. The bank identified here as “C” is the one closest to the processor.

- 5 If you need to remove a main memory module, release the retaining clip and pull the module forward and out of the socket.
- 6 Install any other accessories before replacing the airflow guide and cover. Reconnect all cables and power cords.
- 7 Check the HP Summary Screen to verify the new configuration. Refer to page 60.

### Installing a Video Memory Upgrade (Integrated Video Models)

If you have an integrated video display, your PC is supplied with 1 MB of video memory on the system board. You can install a pair of video memory modules to increase your available video memory to 2 MB.

---

**CAUTION**

Static electricity can damage electronic components.

Turn all equipment OFF. Don't let your clothes touch the accessory. Handle the accessory as little as possible and with care.

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### To Install Video Memory Modules

- 1 Disconnect the power supply cord and any connection to a telecommunications network.
- 2 Remove the computer's cover.
- 3 Remove the airflow guide if necessary (refer to page 18).

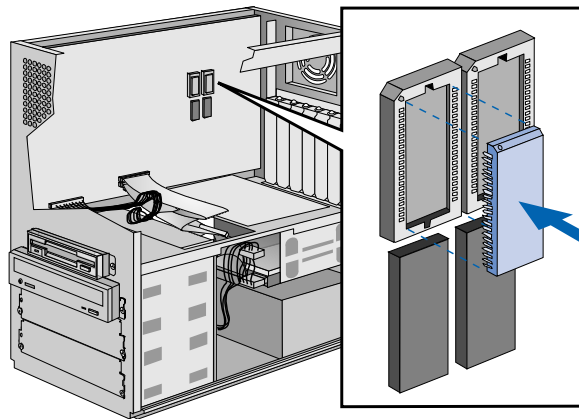
## 2 How to Install Accessories In Your PC

### Installing Memory

- 4 Align the video memory module directly over the socket taking care to align the dot on the module with the corner notch on the socket as illustrated in the diagram. (Refer to next page.)

Press the memory module *completely* into the connector

Video memory modules  
must be installed in pairs.



- 5 Install any other accessories before replacing the airflow guide and cover. Reconnect all cables and power cords.

### After Installing a Video Memory Upgrade

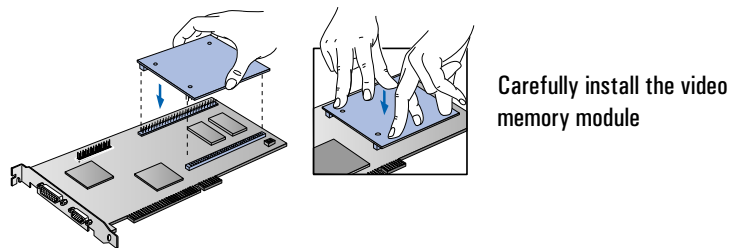
- 1 Switch on the PC.
- 2 Follow the instructions that come with your video memory upgrade or that are in your operating system manual to configure the new video memory upgrade.
- 3 You may be asked to insert a diskette containing an appropriate video driver in drive A. For the latest version of a required driver, refer to page 67.



### Upgrading the MGA Millennium Board Memory

If your PC has the MGA Millennium video board instead of integrated video memory, you can increase its memory from 2 MB to 4 MB to get more colors and better video resolution.

- 1 Switch off the display and computer, and disconnect the power supply cables and any telecommunications cables. Remove the computer's cover.
- 2 Remove the airflow guide if necessary (refer to page 18).
- 3 Unscrew and remove the screw securing the MGA Millennium board. Put the screw to one side. Note which slot the board is in.
- 4 Carefully remove the board from its slot, holding the board at each end by its top edge. Do not bend the board. With its components facing up, place the board on a clean, flat, solid, static-free surface. Handle the board by its edges.
- 5 Install the memory module on the video board. Carefully slide the board back into its slot. Firmly press the board into the socket. Make sure that the board's connector engages completely with the socket and does not touch components on other boards you may have installed. Secure the board by replacing the screw.



- 6 Install any other accessories before replacing the airflow guide and cover and reconnecting the cables.
- 7 After switching on the PC, change the video resolution and the number of colors displayed. Alternatively, use utilities supplied with the operating system. See your operating system documentation and online help for more information.

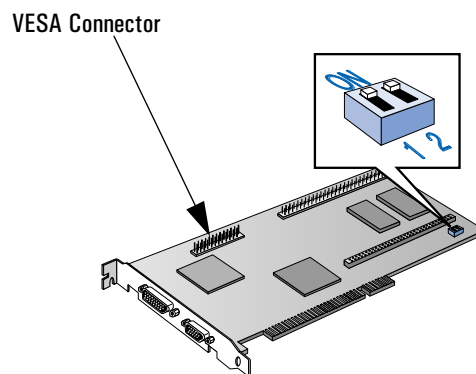
## 2 How to Install Accessories In Your PC

### Installing Memory

Two configuration switches are on the Matrox video adapter board.

Switch	Use Switch Block to:
1	Flash EEPROM Switch for VGA BIOS: <ul style="list-style-type: none"><li>• OFF to prevent Video BIOS upgrades — DEFAULT</li><li>• ON to allow Video BIOS upgrades.</li></ul>
2	Enable or disable VGA for single-screen or dual-screen operation (with a second VGA controller): <ul style="list-style-type: none"><li>• OFF for single-screen operation — DEFAULT</li><li>• ON for dual-screen operation (with a second VGA controller).</li></ul>

Contact your HP representative for further information about upgrading the VGA BIOS.



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## Installing Mass Storage Devices

If you need to have extra mass storage space for your application software, you can install additional mass storage devices, such as a flexible disk drive, hard disk drive, or tape drive.

Your PC already has one hard disk drive installed in the back shelf. You can install another hard disk drive in the bottom internal shelf, beneath the existing hard disk drive.

Your PC has a 3.5-inch flexible disk drive and a CD-ROM drive installed in two front-access device shelves. Two more front-access device shelves are available to install flexible disk drives, CD-ROM drives, or tape drives.

Your PC has the following cables and connectors on the system board which may be used by mass storage devices:

- An Enhanced IDE (Integrated Drive Electronics) hard disk drive cable. This supports up to two IDE hard disk drives, one of which is already connected. On the system board, this cable's connector is labeled "Primary IDE".
- A second Enhanced IDE drive cable with two red connectors. If you install a CD-ROM drive, or a third hard disk drive, or both, connect it or them to this cable. On the system board, this cable's connector is labeled "Secondary IDE".
- A flexible disk drive cable. This supports up to two flexible disk drives, one of which is already connected.

---

### **NOTE**

You can install a non-IDE mass storage device, but this requires an accessory board and driver software. Contact your authorized reseller for information.

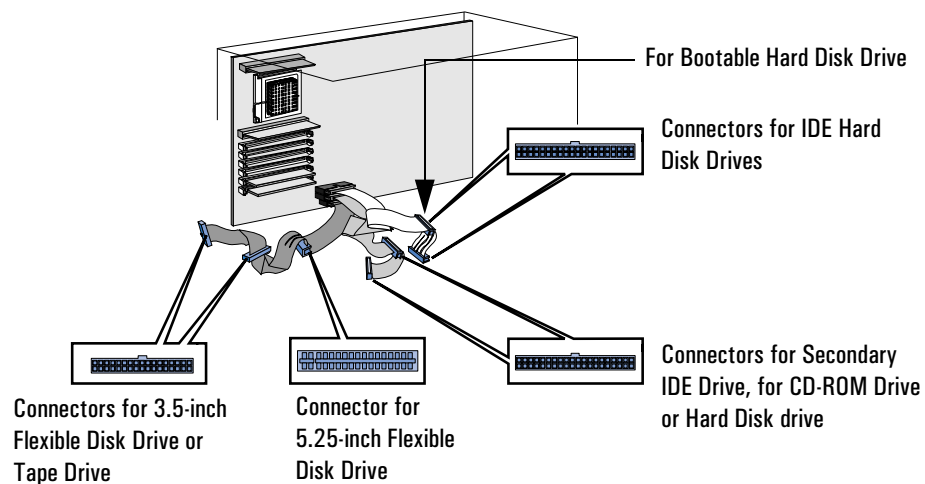
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## 2 How to Install Accessories In Your PC

### Installing Mass Storage Devices

#### Internal Connectors

If you add a flexible disk drive, hard disk drive, CD-ROM drive, or tape drive, you need to connect it to power and data cables. The data cables are shown below:



#### Which Connectors to Use

There are two different cables for IDE drives:

- The first cable is attached to the connector marked “Primary IDE” on the system board connector, and has two connectors on the cable. The first connector must be connected to the bootable (master) hard disk drive. The second (or slave) connector is for a secondary hard disk drive.
- The second cable is attached to the connector marked “Secondary IDE” on the system board, and has two connectors on the cable. The connectors can be used for either CD-ROM drives or hard disk drives.

#### NOTE

If you install a hard disk drive and connect it to the same cable to which the CD-ROM drive is connected, the hard disk drive must be connected to the *middle* connector, not the end connector. If you have a CD-ROM drive currently connected to the middle connector, you must reconnect the CD-ROM drive to the end connector of the cable, and then attach the new hard disk drive to the middle connector.

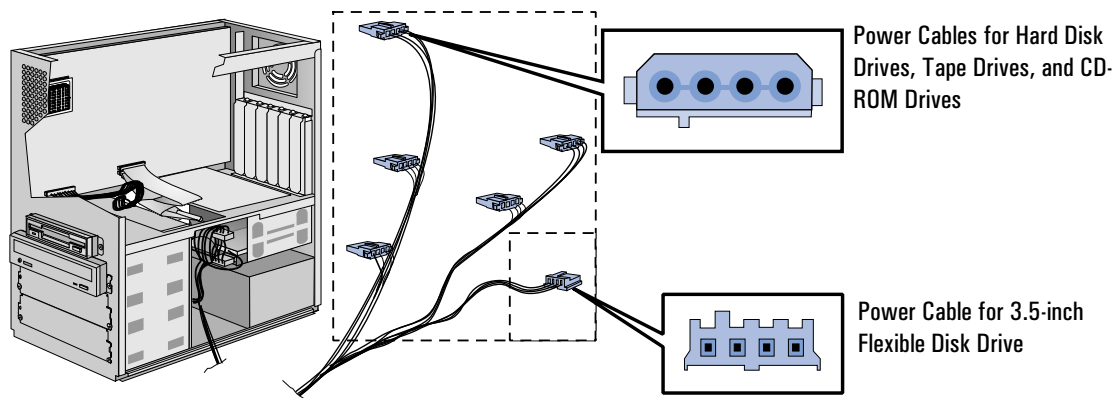
The following table explains which connectors you should use when you install additional devices.

Configuration	Connections to Data Cables	
1 Hard Disk Drive	1. Bootable hard disk drive:	First connector, Primary IDE Cable
2 Hard Disk Drives	1. Bootable hard disk drive:	First connector, Primary IDE Cable
	2. Second hard disk drive:	Second connector, Primary IDE Cable
3 Hard Disk Drives	1. Bootable hard disk drive:	First connector, Primary IDE Cable
	2. Second hard disk drive:	Second connector, Primary IDE Cable
	3. Third hard disk drive:	Secondary IDE Drive Cable Connector
4 Hard Disk Drives	1. Bootable hard disk drive:	First connector, Primary IDE Cable
	2. Second hard disk drive:	Second connector, Primary IDE Cable/CD-
	3. Third hard disk drive:	Secondary IDE Drive Cable Connector
	4. Fourth hard disk drive:	Secondary IDE Drive Cable Connector

**NOTE**

When connecting hard disk drives, note that if the drives are connected to the same data cable, and the drives operate in different modes (or speeds), the slower speed will be used. To avoid possible degradation of disk performance, it is recommended that, whenever possible, hard disk drives are placed on different cables.

There are two different types of connectors—these are shown below.



Some of the power connectors will already be connected to devices. If you install a device that requires a different connector, the connector converter should be supplied with the device.

## 2 How to Install Accessories In Your PC

### Installing Mass Storage Devices

#### Installing an Additional Hard Disk Drive

Refer to the drive's manuals to see if you must set jumpers or if there is a special installation procedure to follow. If your new hard disk drive already has a mounting tray attached, you must remove it before you can install the drive in your PC.

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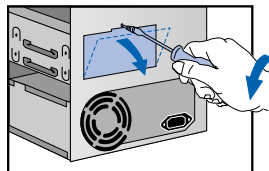
**CAUTION**

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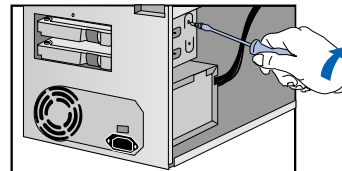
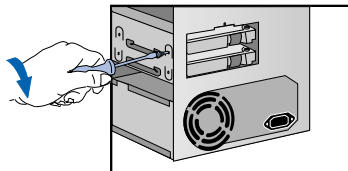
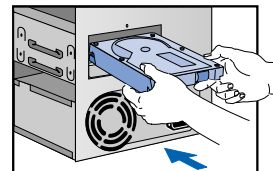
Make sure that you back up your files before you install a hard disk drive. Refer to your operating system documentation for information on how to do this.

- 1 Switch off the display and computer, and disconnect the power supply cables and any telecommunications cables.
- 2 Remove the computer's cover (see page 17).
- 3 Remove the airflow guide (refer to page 18), if necessary.
- 4 Unscrew the access plate on the rear on the computer.
- 5 Pass the drive through the shelf.
- 6 Secure the drive to the box, using the four screws provided with the drive. Two screws must be inserted in each side. Using screws other than those provided may cause damage to the device.

Step 4: Unscrew rear access plate.



Step 5: Pass drive through shelf

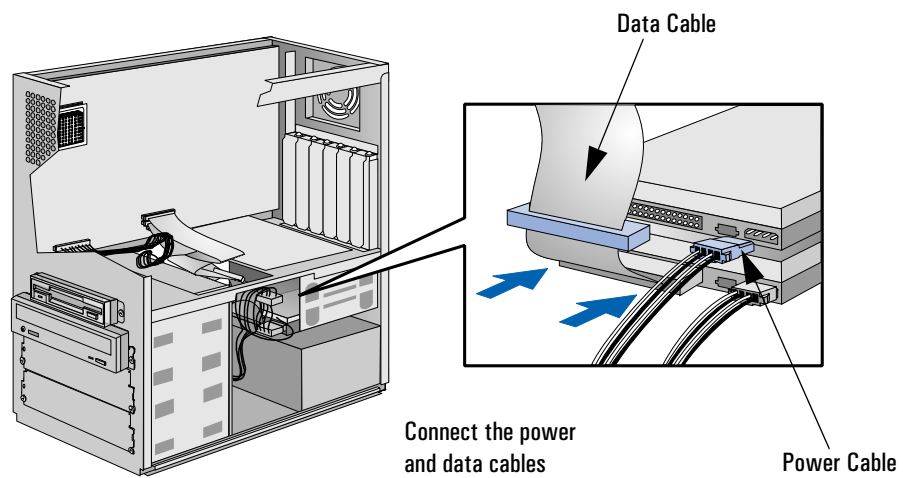


Step 6: Secure drive to box.

## 2 How to Install Accessories In Your PC

### Installing Mass Storage Devices

- 7 Resecure the access plate on the rear of the computer.
- 8 Connect the power and data cables to the rear of the drive, if you have not done so already. The connectors are shaped to fit one way only. Use the end connector on the diskette data cable—see “Internal Connectors” on page 26 for an illustration of the cables and connectors.



- 9 Install any other accessories, before replacing the airflow guide and cover.

## 2 How to Install Accessories In Your PC

### Installing Mass Storage Devices

#### Installing a Flexible Disk Drive, CD-ROM Drive, or Tape Drive

---

**WARNING**

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To take care to avoid electric shock and harm to your eyes by laser light from a CD-ROM drive, do not open the CD-ROM drive enclosure. The drive should be serviced by authorized service personnel only.

- 1 Switch off the display and computer, and disconnect the power supply cables and any telecommunications cables.
- 2 Remove the computer's cover (see page 17).
- 3 Remove the airflow guide (refer to page 18), if necessary.
- 4 Remove the small cover plate on the shelf by unsnapping it first from the right side, and then pulling it out.
- 5 Check that the mounting rails are attached to the device with the screws provided.
- 6 Slide the drive completely into the shelf.
- 7 Connect the power and data cables to the rear of the device (the connectors are shaped to go in one way only). See "Internal Connectors" on page 26 for more information about which connectors to use.
- 8 Secure the device in position using the screws provided with the device.
- 9 To allow access to the device, remove the relevant shelf cover plate from the cover by pulling the plate from the left and unhinging its right-hand side. Store it in a safe place.
- 10 Install any other accessories before replacing the airflow guide and cover.

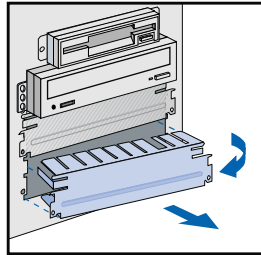


## 2 How to Install Accessories In Your PC

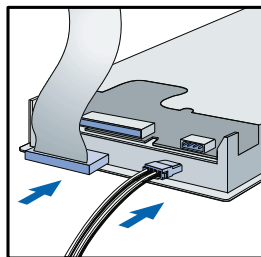
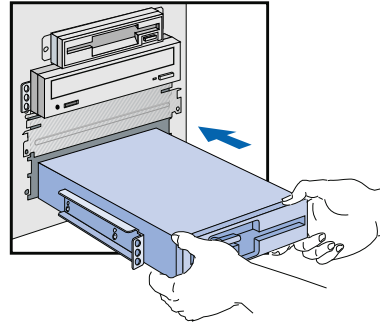
### Installing Mass Storage Devices

To Install a Drive:

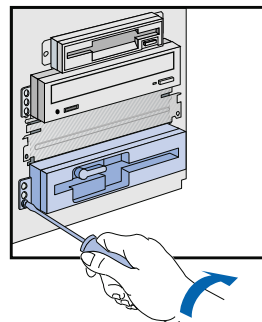
**Step 4: Remove the cover plate.**



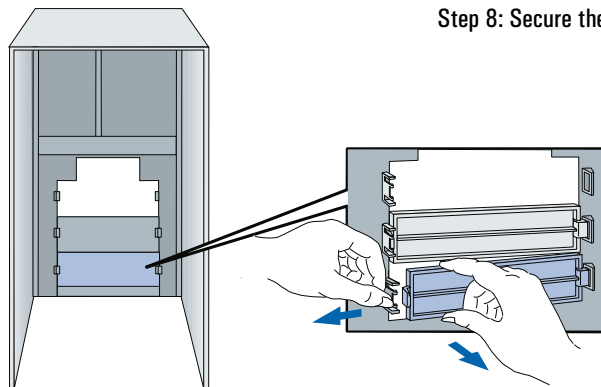
**Step 6: Slide the drive into the shelf.**



**Step 7: Connect the power and data cables.**



**Step 8: Secure the device in position.**



**Step 9: Remove the shelf cover plate**

---

## Installing Accessory Boards

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### **CAUTION**

Static electricity can damage electronic components. Turn all equipment off. Don't let your clothes touch the accessory. To equalize the static electricity, rest the accessory bag on top of the computer while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.

---

The PC has six accessory board slots with seven connector sockets. These slots allow you to install upgrade boards as follows:

- Slot 1 (the innermost) can be used for a short 16-bit ISA or a 32-bit PCI board (16 cm/6.3-inch maximum length).
- Slots 2 and 3 can be used for 32-bit PCI boards.
- Slot 4 can be used for a full-length 16-bit ISA or a 32-bit PCI board.
- Slots 5 and 6 can be used for full-length 16-bit ISA boards.

### Configuring Accessory Boards with Plug and Play

Plug and Play is an industry standard for automatically configuring your PC's hardware resources and the accessory boards installed in it. If your operating system supports Plug and Play, your PC has configurable support for Plug and Play in the BIOS.

All PCI accessory boards are Plug and Play, although not all ISA boards are. Check the accessory board's documentation if you are unsure.

When you start your PC after installing an accessory board, the Plug and Play BIOS automatically detects which hardware resources (IRQs, DMAs, memory ranges, and I/O addresses) are used by the system-based components.

### Configuring non-Plug and Play ISA Accessory Boards

If you install an ISA accessory board that is not Plug and Play you will need to configure the board before your PC can use it.

Refer to the documentation supplied with the operating system for details on your operating system's capabilities and restrictions concerning how to configure non-Plug and Play accessory boards.

### Installing the Board

- 1 Switch off the display and computer, and disconnect the power supply cables and any telecommunications cables. Remove the computer's cover.
- 2 Remove the airflow guide (refer to page 18), if necessary.
- 3 Find a free accessory board slot with the correct type of connector socket (PCI or ISA). Some boards may have preferred locations, in which case special installation instructions should be detailed in their manuals.

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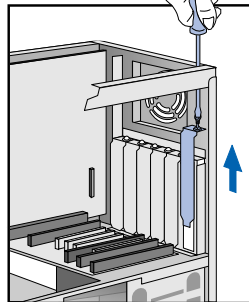
**NOTE**

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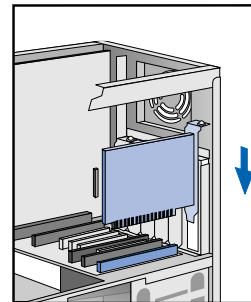
Your PC may have a small terminator board installed in a PCI slot. You must remove this board before installing any PCI accessory boards.

- 4 Unscrew and remove the accessory board slot cover. Store it in a safe place. If the slot cover is tight, loosen the screws on the adjacent slots.

**Step 4: Unscrew and remove the accessory board slot cover.**



**Step 5: Slide the board into a free slot.**

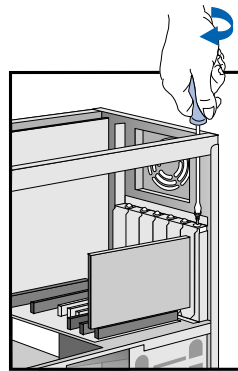


- 5 Hold the board vertically with the connector towards the socket. Slide it into the free slot from which you have just removed the slot cover. Do not bend the board.

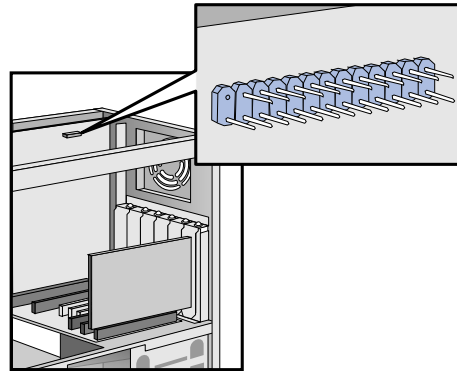
## 2 How to Install Accessories In Your PC

### Installing Accessory Boards

- 6 Align the board's connector with the slot's socket. Firmly press the board into the socket. Ensure that the board's connector engages completely with the socket and does not touch components on other boards. The connector is fully in the socket when the board is aligned with the other slot covers.
- 7 Secure the board by replacing the slot cover screw.  
If you loosened the screws on adjacent slots, tighten them.
- 8 If you have installed a VESA-standard video adapter board, connect the accessory board's cable to the VESA pass-through connector that is either on the system board (for integrated video models) or on the Matrox MGA Millennium video board.



Step 7: Secure the board.



Step 8: Installing a VESA adapter  
(integrated video).

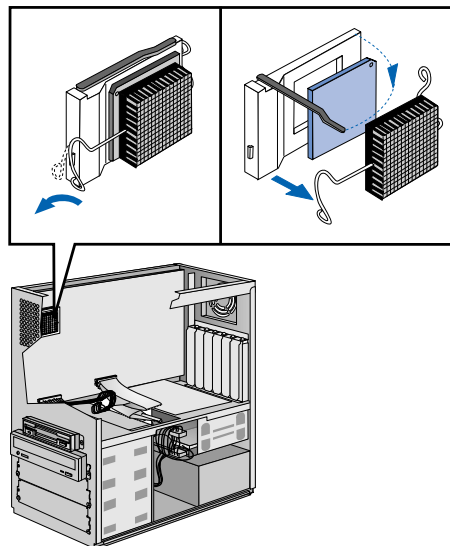
- 9 Install any other accessories before replacing the cover and reconnecting the cables.

---

## Installing an OverDrive Processor

You can install an Intel OverDrive™ processor in your PC. Contact your authorized reseller for more details about the availability of the Intel OverDrive processor for your PC.

- 1 Disconnect the computer power cords from the power outlets, and disconnect the PC from any telecommunications network.
- 2 Remove the computer's cover.
- 3 Remove the air flow guide (refer to page 18).
- 4 If the heat sink is not directly attached to the processor, unclip the heatsink. (Be careful not to let the heat sink fall when you unclip it.)
- 5 Raise the lever on the socket to unlock the processor and lift out the processor. (Be sure not to let the processor fall when you unlock and lift it out.)



## 2 How to Install Accessories In Your PC

### Installing an OverDrive Processor

6 To install the new processor:

- a Locate the corner markers:
  - on the processor—a dot or notch (“broken” corner)
  - on the processor socket—a dot.
- b Position the processor over the socket, with its corner marker facing the corner marker on the socket.
- c Place the processor into the socket.
- d Lower the lever to lock the processor into place.
- e Replace the heatsink and fasten the clip, if the heatsink is not directly attached to the processor.

---

**CAUTION**

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Do not change the system board switches after you install an OverDrive processor processor.

7 Replace the PC's cover. Reconnect all cables and power cords.

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## Troubleshooting Your PC

This chapter can help you solve problems that you may encounter when using your PC.

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## Solving Problems

This chapter can help you solve most problems you might have with your PC.

If you are unable to solve your problem after following the advice in this chapter, refer to "Hewlett Packard Support and Information Services", on page 61.

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## HP Summary Screen

The HP Summary Screen provides information about your PC's current configuration. To view the Summary Screen, press **Esc** just after your PC is switched on and while the Vectra Logo appears during the Power-on-Self-Test (POST). Refer to "HP Setup Program", on page 60.



---

## **If Your PC Does Not Start Properly**

Use this section if your PC does not start properly when you turn it on, and you experience one of the following symptoms:

- Your PC's display is blank and there are no error messages.
- You cannot start your PC from a modem.
- A POST error message is displayed.

### **Display is Blank and There Are No Error Messages**

If your display is blank and there are no error messages when you turn on your PC, follow this procedure:

- 1 Check external items.
- 2 Check internal items.
- 3 Rebuild your PC's components.

#### **Check External Items**

Be sure the following external items are functioning properly:

- Check that the computer and display are turned on. (The power light should be illuminated.)
- Check the display's contrast and brightness settings.
- Make sure that all cables and power cords are firmly plugged in.
- Make sure the power outlet is working.

### 3 Troubleshooting Your PC

If Your PC Does Not Start Properly

#### Check Internal Items

If the PC still does not start properly, follow this procedure to check the internal items:

- 1 Turn off the display, the computer, and all external devices.
- 2 Unplug all power cords and cables, noting their positions. Disconnect the PC from any telecommunications network.
- 3 Remove the cover.
- 4 Check the following items:

Action	Reference
Check all internal cables.	Ensure they are correctly attached and firmly in place.
Check that the processor is correctly installed.	Refer to "Installing an OverDrive Processor" on page 35.
Check that the processor speed switches have been set correctly.	Refer to "System Board Switches" on page 57.
Check that the memory modules are correctly installed.	Refer to "Installing Memory" on page 19.
Check that accessory boards are firmly seated in their slots.	Refer to "Installing Accessory Boards" on page 32.
Verify that any switches and jumpers on the accessory boards are properly set.	Refer to the manuals that came with each board.
Check that the switches on the system board are properly set.	Refer to "System Board Switches" on page 57.

- 5 Replace the cover.
- 6 Reconnect all cables and power cords.
- 7 Turn on the display and computer.

#### Rebuild Your PC's Components

If your PC still does not start properly, remove all boards and accessories, except the hard disk drive. Start the PC. If the PC now works, add the boards and accessories one at a time to determine which one is causing the problem.

### If You Cannot Start Your PC from a Modem

If you are running Windows 95 and you have chosen the option to start your PC from a modem, and this option does not work, then you need to change the IRQ setting in the HP *Setup* program.

In the Setup program, go to the Security group, and the “Start-up Center” submenu. Change the IRQ setting for the setup item “Start from Modem”. (Refer to "HP Setup Program", on page 60.)

### If a POST Error Message is Displayed

The Power-On-System-Test (POST) can detect both an error and a change to the configuration. In either case, an error code and short description is displayed. Depending on the kind of error, you will have one or more of these choices available on screen:

- Press **(F1)** to ignore the message and continue.
- Press **(F2)** to run *Setup* and correct a system configuration *error*. HP recommends that you correct the error before proceeding, even if the PC appears to start successfully.
- Press **(F4)** to accept (validate) the change and update *Setup*'s configuration information.
- Press **(Enter)** to see more details about the message. After viewing these details, you will be returned to the original POST display screen. If the message is actually a change to the configuration you have made (for example, you have just removed some memory), you can then press **(F4)** to accept the change and update *Setup*'s configuration information. Otherwise, press **(F1)** to ignore the message and continue, or press **(F2)** to run *Setup* and correct a system configuration *error*. (The number of choices you will have available are dependent on the kind of error.)

### 3 Troubleshooting Your PC

If Your PC Does Not Start Properly

#### Clearing the PC's Configuration Memory

If the PC then starts, but POST still persists in reporting an error, clear the current configuration memory values and reinstall the built-in default values:

- 1 Turn off the PC, disconnect the power and cables, and remove the cover. Disconnect the PC from any telecommunications network.
  - a Set the system board switch 6 (CMOS STATUS) to CLOSED to clear the configuration.
  - b Replace the cover, and reconnect the power cable only.
  - c Turn on the PC. This will erase the CMOS memory.
  - d Wait until the PC has started. A message will be displayed similar to this:  

```
"Configuration has been cleared, set switch 6 to the OPEN position before rebooting."
```

Turn off the PC, disconnect the power cable, and remove the cover.
  - e Set the system board switch 6 (CMOS STATUS) on the switch block to OPEN to re-enable the configuration.
- 2 Replace the cover, and reconnect the power and cables.
- 3 Switch on the PC. An error message will be displayed similar to this:  

```
"Incorrect PC configuration"
```

The PC will stop. Press any key to continue. A "pop-up" screen will appear stating that the:  

```
"CMOS checksum is invalid.  
Default values will be loaded.  
Press any key to continue".
```
- 4 Run *Setup* by pressing **(F2)**. CMOS default values will be automatically downloaded and saved.
- 5 Make any other changes you want and press **(F3)** to save the configuration and exit from *Setup*.

---

## **If You Cannot Turn Off Your PC**

Use this section if you cannot turn off your PC, the power indication light is red, and you hear a “buzzing” sound.

- Check if your PC is locked, whereby “power-off” is not allowed. You will need to enter a password to unlock the PC (refer to "Power-On Password", in the HP Setup program —refer to "HP Setup Program", on page 60—and to "Setting Passwords", on page 11).
- Check if you are in a suspend/sleep mode, where by a “power-off” would risk a loss of information/data (refer to "Power Menu Items", in the HP Setup program —refer to "HP Setup Program", on page 60).

---

## **If Your PC Has a Hardware Problem**

This section describes what to do if you have problems with your display, disk drives, printer, accessory board, keyboard, or mouse.

### **Display Does Not Work Properly**

#### **If Your Display is Blurred or Unreadable**

If you have selected the wrong display, the display screen may become blurred or unreadable. To correct this problem:

- Select the correct display by referring to the display options section in the HP-provided online user setup information that came with your PC.
- Alternatively, select the correct display by using the procedures in the operating system on your PC. Refer to your PC’s operating system documentation for details.

### 3 Troubleshooting Your PC

If Your PC Has a Hardware Problem

#### If Nothing is Displayed on the Screen

If nothing is displayed on the screen, but the PC starts and the keyboard, disk drives, and other peripheral devices seem to operate properly:

- Make sure that the display is plugged in and switched ON.
- Check that you have entered a password if you have set the keyboard and mouse to “locked”. You can change this setting in the *Setup* program. Refer to "Security Menu Items" (refer to "HP Setup Program", on page 60).
- Check that the brightness and contrast controls are properly set.
- Ensure that the display video cable is correctly connected.
- Switch off the display, and unplug it from the power outlet. Disconnect the video cable and examine the video cable connector pins. If the pins are bent, carefully straighten them.
- Check that the video upgrade is properly installed if you have one.
- Check that an accessory board doesn't use the same I/O address as the integrated video interface (03B0h to 03DFh). Refer to the manual supplied with the accessory for further information.
- If the display works correctly during the Power-On-Self-Test (POST), but goes blank when Windows starts, check that you have enough memory for the video mode you have selected.
- If your screen's refresh rate is set too high, the screen might be blank. Check the refresh settings to ensure they are not too high.

#### Other Display Problems

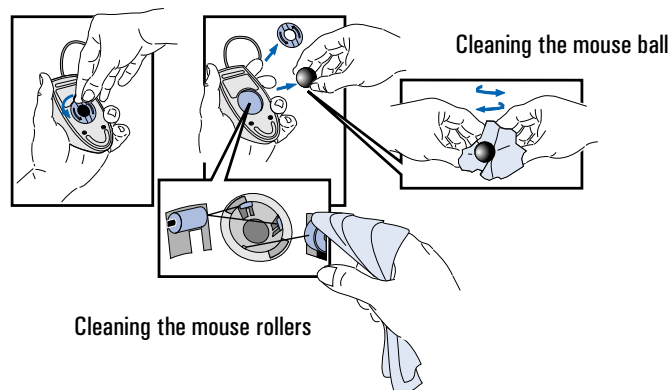
If the display image is not aligned with the screen, use the display's controls to center the image (refer to the display manual for instructions). If the screens generated by the applications do not appear to be correct, check the application's manual to find out which video standard is required. Also check your display manual to find out which refresh rate is required. Use *Setup*, or your operating system's procedures, to select the correct refresh rate.

### If Your Keyboard Does Not Work

- Ensure that the keyboard is correctly connected.
- If you turn on your PC, the operating system boots, the keyboard is correctly connected, but your keyboard is still not available, the power-on password may be set to “keyboard locked”. You will need to enter a password to unlock the keyboard (and mouse). You can change this setting in the *Setup* program. Refer to "Security Menu Items" (refer to "HP Setup Program", on page 60).

### If Your Mouse Does Not Work

- Ensure that the mouse is correctly connected.
- Ensure that the mouse driver supplied with the preloaded software is installed correctly. (Choose a Logitech® mouse driver.)
- Clean the mouse ball and rollers as shown in the figure below (use a non-residual contact cleaner).



### 3 Troubleshooting Your PC

If Your PC Has a Hardware Problem

#### If Your Printer Does Not Work

- Make sure the printer's power switch is ON.
- Verify that the power cord is plugged into the power outlet and the printer.
- Verify that you have the correct cable for the printer. Make sure that it is securely connected to the correct connector (port) on the PC and printer.
- Check that the printer is online.
- Examine the paper feed mechanism for a paper jam.
- Make sure that the printer is configured correctly for the PC and for the application.
  - a Ensure the PC's port has been correctly configured using *Setup*.
  - b Make sure the printer is correctly set up in your operating system's configuration.
  - c Ensure the application program's "print" menu has been correctly set up. (Refer to the manual supplied with the application software.)
- Check that the PC's port is working properly by running another peripheral connected to the port.
- If you receive an error message, refer to the printer's manual for help.



### If the Flexible Disk Drive Does Not Work

- Ensure you are using a formatted diskette and it is inserted correctly.
- Check you are using a diskette that is the right density.
- Check that your flexible disk drive is correctly configured in the *Setup Configuration* menu.
- Check the option on the *Setup Configuration* menu which enables or disables the on-board flexible disk controller.
- Clean the flexible disk drive using a diskette cleaning kit.
- Check that the flexible disk drive has been enabled in *Setup*.
  - Flexible disk drive (refer to "Hardware Protection Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 60)
  - Boot on flexible disk drive (refer to "Start-up Center Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 60)
  - Write on flexible disk drives (refer to "Start-up Center Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 60)
- Check that the disk power and data cables are correctly connected.

### 3 Troubleshooting Your PC

If Your PC Has a Hardware Problem

#### If the Hard Disk Does Not Work

- Check that the disk power and data cables are correctly connected (refer to "Which Connectors to Use", on page 26).
- Check that the hard disk drive has been "enabled" (refer to "Hardware Protection Submenu (Security group) in the HP Setup program—see "HP Setup Program", on page 60). There is also an option in the *Setup* program that lets you disable or enable boot on hard disk drive (refer to "Start-up Center Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 60).
- Check that the hard disk drive has been detected (refer to "IDE Devices Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 60).
- Check that the on-board Bus IDE is enabled if you are using the integrated IDE controller (refer to "IDE Devices Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 60).

#### If the Hard Disk Activity Light Does Not Work

If the hard disk activity light does not flicker when the PC is accessing the hard disk drive:

- Check that the control panel connector is firmly attached to the system board.
- Check that the disk power and data cables are correctly connected.

---

#### NOTE

If you are using a hard disk drive with a controller board (a SCSI hard disk, for example), the activity light does **not** flicker when the PC is accessing the hard disk drive

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### If the CD-ROM Drive Has a Problem

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**WARNING**

Be sure to disconnect the power cord and any telecommunication cables from your computer before you remove the cover to check the cable connections or jumper settings.

To avoid electric shock and harm to your eyes by laser light, do not open the CD-ROM drive enclosure. The CD-ROM drive should be serviced by service personnel only. Refer to the label on the CD-ROM for power requirements and wavelength. This PC is a class 1 laser product. Do not attempt to make any adjustment of the laser unit.

---

### CD-ROM Drive Does Not Work

- Check that the cables have been properly connected.
- Check that a CD is inserted in the drive.
- Verify that the CD-ROM is declared as "CD" in the *Setup* program (refer to "IDE Devices Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 60).
- Verify that the **Bus IDE Adapters** item is set to **Both** in *Setup* (refer to "IDE Devices Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 60).
- If you intend to boot on CD-ROM, make sure that this option is enabled in *Setup* (refer to "Start-up Center Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 60).
- For further information refer to the CD-ROM documentation.

### CD-ROM Drive is Idle

If the CD-ROM drive does not appear to be working, try accessing the disk by clicking on the CD-ROM drive icon or drive letter assigned to the CD-ROM drive by your operating system.

### 3 Troubleshooting Your PC

If Your PC Has a Hardware Problem

#### If an Accessory Board Does Not Work

Carry out the following checks:

- Ensure the board has been firmly installed in the accessory board slot.
- Check that the accessory board has been correctly configured with the ISA Configuration Utility if necessary.
- Ensure the board is not using memory, I/O addresses, an IRQ, or DMA also used by the PC. Refer to "IRQs, DMAs, and I/O Addresses Used by Your PC", on page 59. Refer to the board's manual for further details.
- Check that the PC has been configured correctly in *Setup*.

---

## If Your PC Has a Software Problem

### If You Have Forgotten Your Password

- ❑ If you forget the User Password, but not the Administrator password, carry out the following procedure:
  - 1 Switch off the PC.
  - 2 Restart the PC. If the keyboard is locked, enter the administrator password.
  - 3 Wait for **F2=Setup** to be displayed.
  - 4 Press **(F2)** to start *Setup*.
  - 5 Enter the Administrator Password to access the **Security/User Password** menu.
  - 6 Move to the User Password field and set a new User Password. This will replace the old password which you had forgotten.
  - 7 Press **(F3)** to save the new Password and exit *Setup*.
- ❑ If you forget both the User Password and the Administrator Password:
  - 1 Switch off the PC.
  - 2 Remove the computer's cover.
  - 3 Set switch 5 on the system board switch block to CLOSED.
  - 4 Switch on the PC and allow it to complete its startup routine.  
The message "Passwords have been cleared, power-off your PC and set switch 5 to open position before restarting" will be displayed.
  - 5 Switch off the computer.
  - 6 Reset switch 5 to OPEN.
  - 7 Replace the computer's cover.
  - 8 Switch on the PC and allow it to complete its startup routine.
  - 9 After the Power-On Self-Test has completed, press **(F2)** when prompted to use *Setup*.
  - 10 Set new User and System Administrator Passwords.
  - 11 Press **(F3)** to save the new passwords and exit *Setup*.

### 3 Troubleshooting Your PC

#### If You Have a Network Problem

#### If Your Application Software Does Not Work

If the PC reports the system is OK and the indicator light over the power switch is illuminated, but some software won't run:

- Refer to the operating system and application software manuals.
- If Windows does not run properly, refer to the Windows manual for guidance.

#### If the Date and Time are Incorrect

The date and time can be incorrect for the following reasons:


- the time has changed for the seasons
- the PC has been unplugged from the power too long, and the battery is discharged.

To change the date and time, use your operating system utilities or the *Setup* program.

---

## If You Have a Network Problem

If you have a problem with your PC's network, run the HPIEDIAG utility (preloaded on your PC's hard disk drive):

- 1 Select drive C: to access the PC's hard disk drive.
- 2 Change to the DIAG directory by typing either:  
**CD\LANDRV\DIAG**  
**CD\LAN\DIAG**
- 3 Start the HPIEDIAG utility by typing: **HPIEDIAG** . Follow the instructions on the screen.

Then check the configuration of the integrated Ethernet interface using the *Setup* program (refer to "Integrated Network Interface Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 60). Refer also to the online *Network Administrator's Guide*.

---

## If Your PC Has an Audio Problem

### No Sound When Running Any Applications

First, check that the output volume is not set to zero. Use the volume control on the front panel. Make sure the headphones are not connected directly to the CD-ROM drive (see the connection information in chapter 1).

Remember also that plugging the headphones into the front panel cuts out sound to the internal speaker and to external speakers connected to the audio Stereo Out jack.

When your PC starts up, the integrated audio interface may have no IRQ or DMA settings. These settings are initialized by software upon startup. Your system files may not have the necessary entries. Run the Setup program to configure the IRQ and DMA settings.

Absence of sound can also be caused by a hardware conflict. Hardware conflicts occur when two or more peripheral devices compete for the same signal lines or channels. Conflicts between your audio interface and another peripheral device might be due to the settings of the I/O addresses, IRQ channel, or DMA channel. To resolve the conflict, change the settings either of the audio interface or of any other ISA accessory in your system.

### No Output from the 8-bit or 16-bit Digitized Sounds

This might be due to the DMA channel selected. If you hear no output from both the 8-bit and 16-bit digitized sounds, this might be due to an interrupt conflict. Use the HP Setup program or your operating system's audio control software to change the audio interface's DMA channel or IRQ setting.

### The Volume is Too Low

The computer has two output jacks, Stereo Out on the rear of the computer and a headphones jack on the front panel, which provide the same output signal. This is a low-distortion output that cannot drive (without amplification) low-impedance devices such as speakers. If you plug devices with a low-impedance (less than 32 ohms) into the Stereo Out jack or the headphones jack, the volume will be low.

### Audio Input from the Microphone is Too Low, or No Audio At All

Check that the microphone specifications meet the requirements of the 16-bit sound components. The microphone should be a 600-ohm dynamic type.

### 3 Troubleshooting Your PC

If Your PC Has an Audio Problem

Humming Noise	If the power grounding of your audio components is inadequate, a humming noise may be generated. This may happen if your PC is connected to a hifi system. Plug all devices into adjacent power outlets (outlets within 5 cm / 2 inches of each other), or use line filters.
Occasional Crackles When Playing Back Sounds	These crackles are usually the result of your PC being unable to transfer audio samples within the required time. A solution is to use a lower sampling rate. Recording and playing back at 22 kHz is less demanding upon system resources than recording audio at 44 kHz.
The PC Hangs While Recording	<p>Uncompressed digital audio can eventually fill your hard disk. For example, one minute of stereo sound recorded at a resolution of 44 kHz will occupy about 10.5 MB. Before recording, check that there is enough free space on your hard disk.</p> <p>Data compression can reduce the space required. The A-law and <math>\mu</math>-law hardware compression used by the audio interface enables the sampling of sound at a resolution of 16-bits, but it generates the same quantity of data as an 8-bit sample.</p>
MS-DOS Games Give "Not enough memory" Errors	Many games require a large amount of base memory and may not execute if many drivers or TSR (Terminate and Stay Resident) programs are installed. You may solve this problem by loading device drivers and TSRs into high memory. Refer to your MS-DOS manual for details of how to do this.



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## Changing the Battery

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### **WARNING**

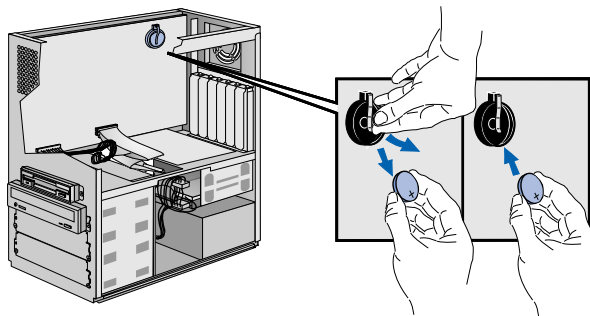
There is a danger of explosion if the battery is incorrectly installed. For your safety, never attempt to recharge, disassemble, or burn the old battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. The battery in this PC is a lithium battery which does not contain heavy metals, nevertheless, in order to protect the environment, do not dispose of batteries in household waste. Please return used batteries to the shop from which you bought them, or to the dealer from whom you purchased your PC, or to HP, so that they can either be recycled or disposed of in an environmentally sound way. Returned used batteries will be accepted free of charge.

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You should order replacement battery HP 1420-0314 from your local Sales and Service office, or a “2325 type” battery, which is available from most local stores.

After removing the computer's cover:

- 1 Remove the old battery by sliding it from under the retaining clip (note the position of the cross).



- 2 Place the new battery in the battery holder, with the cross in the same position as the old battery, and ensure that it is properly seated. Ensure that the clip is in place and holds the battery firmly.

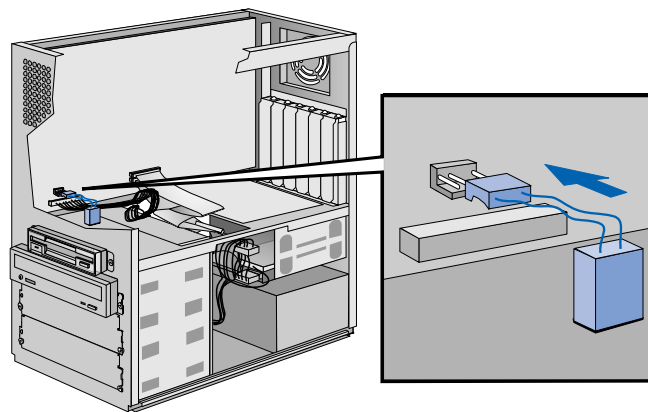
### 3 Troubleshooting Your PC

#### Changing the Battery

##### External Battery

You can also install an external battery in the PC (HP part number 1420-0513), which you can order from your authorized reseller. Install the external battery as follows:

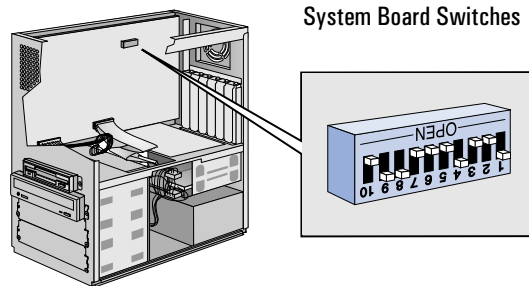
- 1 After removing the computer's cover, connect the external battery cable to the battery connector on the system board.
- 2 Mount the external battery as shown below, using the self-adhesive strip supplied.



After installing either a replacement or an external battery, replace the computer's cover and run the *Setup* program to reconfigure the computer.

## Technical Information

### System Board Switches



Switch	Switch function
1-4, 7-8	Processor speed, see next table
5	Password: Open = enabled (default) Closed = disabled / clear User and Administrator passwords
6	Prevents changes to the PC's configuration (in CMOS) in the <i>Setup</i> program: Open = normal (default—you can change the configuration in the <i>Setup</i> program) Closed = clear CMOS (to reload <i>Setup</i> defaults and prohibit changes to the <i>Setup</i> program)
9	Keyboard power-on: Open = disabled Closed = enabled (default)
10	Not used

Processor Frequency	Switch 1	Switch 2	Switch 3	Switch 4	Switch 7	Switch 8
120	Closed	Open	Closed	Open	Closed	Open
133	Open	Closed	Closed	Open	Closed	Open
150	Closed	Open	Closed	Closed	Closed	Open
166	Open	Closed	Closed	Closed	Closed	Open
200	Open	Closed	Open	Closed	Closed	Open
233	Open	Closed	Open	Open	Closed	Closed

### 3 Troubleshooting Your PC

#### Technical Information

### Power Consumption

All measurements are in watts (rms).

Consumption by Model Number						
	D4572A	D4573A	D4575A	D4577A	D4578A	D5223A
Off	< 3	< 3	< 3	< 3	< 3	< 3
Windows 95 (without disk transfer)	28	33	34	33	36	32
Windows 95 (with disk transfer)	38	44	45	44	47	43
Suspend	25	29.4	31	29.5	33	28.5

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**NOTE**

When the PC is turned off with the power button on the front panel, the power consumption falls below 5 Watts, but is not zero. The special on/off method used by this PC considerably extends the lifetime of the power supply. To reach zero power consumption in “off” mode, either unplug the PC from the power outlet or use a power block with a switch.

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#### Typical Power Consumption/Availability for ISA Accessory Slots

+ 5 V	4.5A limit per slot (limited by system board)
+ 12 V	1.5A limit per slot (limited by system board)
-5 V	0.1A total power limit (limited by power supply)
-12 V	0.3A total power limit (limited by power supply)

#### Typical Power Consumption/Availability for PCI Accessory Slots

+ 5 V	4.5A maximum per slot
+ 12 V	0.5A maximum per slot
-12 V	0.1A maximum per slot

There is a maximum per-slot limit of 25 W between all supply rails.

## IRQs, DMAs, and I/O Addresses Used by Your PC

<p>IRQs used by PC</p> <p>The IRQ, DMA, and I/O address mappings shown here are for a PC with a basic configuration. The resources used by your PC may vary, depending upon which accessory boards are bundled with the PC.</p>	<p>IRQ0 system timer</p> <p>IRQ1 keyboard</p> <p>IRQ2 system cascade</p> <p>IRQ3 free if not used for serial port</p> <p>IRQ4 free if not used for serial port</p> <p>IRQ5 free if not used for parallel port</p> <p>IRQ6 flexible disk drive controller</p> <p>IRQ7 free if not used for parallel port</p> <p>IRQ8 real-time clock</p> <p>IRQ9 available for PCI devices, if not used by ISA board</p> <p>IRQ10 available for PCI devices, if not used by ISA board</p> <p>IRQ11 available for PCI devices, if not used by ISA board</p> <p>IRQ12 mouse</p> <p>IRQ13 co-processor</p> <p>IRQ14 integrated IDE hard disk drive controller</p> <p>IRQ15 free if not used by second IDE controller</p>
<p>DMAs used by PC</p>	<p>DMA 0 free</p> <p>DMA 1 free if not used for parallel port in <i>Setup</i></p> <p>DMA 2 flexible disk drive controller</p> <p>DMA 3 free if not used for parallel port in <i>Setup</i></p> <p>DMA 4 used to cascade DMA channels 0-3</p> <p>DMA 5 free</p> <p>DMA 6 free</p> <p>DMA 7 free</p>
<p>I/O Addresses used by PC</p>	<p>170h - 177h, 376h IDE secondary channel</p> <p>1F0h - 1F7h, 3F6h IDE primary channel</p> <p>278h - 27Fh (and 3A8h) parallel port</p> <p>2E8h - 2EFh serial port</p> <p>2F8h - 2FFh serial port</p> <p>370h - 371h integrated I/O controller</p> <p>378h - 37Fh parallel port</p> <p>3B0h - 3DFh (3B0-3BB,300-3DF) integrated video graphics controller</p> <p>3E8h - 3EFh serial port</p> <p>3F0h - 3F5h, 3F7h integrated flexible disk controller</p> <p>3F8h - 3FFh serial port</p> <p>496h - 497h HP reserved</p> <p>678h - 67Bh parallel port if ECP mode is selected</p> <p>778h - 77Bh parallel port if ECP mode is selected</p>

### 3 Troubleshooting Your PC

#### HP Setup Program

#### Integrated Video Graphic Information

The integrated video graphic chip is manufactured by S3 Inc. The graphic chip used is “TRIO 64V2 [IO775]”.

These are the available video graphic resolutions:

640x480

800x600

1024x768

1280x1024

1600x1200

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#### HP Setup Program

Check your PC's configuration when you first use the PC and each time after you install, remove, or upgrade accessories. Follow these instructions:

- |                                   |   |
|-----------------------------------|---|
| First, Turn Off Your PC           | Turn on the display and then the PC. If the PC is already turned on, save your data and exit all programs, then press <b>Ctrl</b> <b>Alt</b> and <b>Delete</b> to restart the PC (Windows 3.11). For Windows 95, use the <b>Shut Down</b> command.              |
| To Go to the HP Summary Screen    | While the <i>Vectra</i> logo appears on your display, press <b>Esc</b> . This will take you to the HP Summary Screen. The Summary Screen will appear for only a short time. To retain the screen indefinitely (until you decide to leave it), press <b>F5</b> . |
| To Go to the <i>Setup</i> Program | To go immediately into the <i>Setup</i> program while the <i>Vectra</i> logo appears on your display (and bypass the Summary Screen), press <b>F2</b> instead of <b>Esc</b> .   |

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Hewlett Packard Support and  
Information Services

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## Introduction

Hewlett Packard computers are engineered for quality and reliability to give you many years of trouble-free service. To ensure that your desktop system maintains its reliability and to keep you up-to-date with the latest developments, HP and a worldwide network of trained and authorized resellers provide a comprehensive range of service and support options which are listed below:

- HP Authorized Reseller
- HP SupportPack
- HP Support Assistant CD-ROM
- HP Information Services

Service	Means of Access
HP Forum on CompuServe	Modem
HP Forum on America Online (US only)	Modem
HP BBS Library	Modem
HP World Wide Web Site	World Wide Web Access
HP FIRST Faxback	Phone and Fax
Audio Tips (US only)	Phone
HP Drivers/BIOS diskettes	Delivered by mail

- HP Support Services
  - Technical phone support
  - Lifeline phone support
  - Network phone-in support.

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### **NOTE**

When calling any of the international telephone numbers listed in this chapter, replace the '+' with your international telephone access code.

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## Your HP Authorized Reseller

HP Authorized Resellers have been trained on HP Vectra equipment and are familiar with its configuration and environment. Authorized Resellers can also answer questions regarding non-HP hardware, software and systems as well as answer queries about usage not intended for, or not commonly used with the HP Vectra.

Authorized HP Resellers can also offer consulting services tailored to your specific needs regarding product development or custom installations, as will third party support services, or the HP Customer Support organization in your country.

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## HP SupportPack

HP's three-year SupportPack is available from your local reseller. It must be purchased within 30 days of purchasing your HP Vectra.

The concept of SupportPack is simple. It allows you to extend your one-year on-site hardware warranty to a three-year on-site hardware warranty, offering next day on-site response.

SupportPack is valid for the piece of equipment for which it was bought, but is not transferable from one piece of equipment to another.

#### 4 Hewlett Packard Support and Information Services

##### HP Support Assistant CD-ROM

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## HP Support Assistant CD-ROM

HP Support Assistant is a yearly subscription service on two CD-ROMs: one for software; and another one for support documentation.

The software CD-ROM is updated monthly and contains the latest HP drivers and utilities. The documentation CD-ROM is also updated monthly and contains:

- Product manuals and service manuals
- Installation and configuration information
- Troubleshooting information
- Technical reference manuals.

Subscriptions to HP Support Assistant can be obtained with an order form which is available from the HP FIRST Faxback system. Request document number 9025 (US and Asia Pacific) or 19025 (Europe). Subscriptions can also be obtained by contacting the following numbers:

Region	Phone Number	Fax Number
Asia-Pacific	+ 65 740-4477	+ 65 740-4499
Europe	+ 31 (55) 384279	+ 31 (55) 434455
Latin America	+ 1 (317) 364-8882	+ 1 (317) 364-8888
US/Canada	1 (800) 457-1762	+ 1 (317) 364-8888

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## Hewlett-Packard Information Services

Hewlett Packard Electronic Information Services are available 24 hours per day, 7 days per week, ensuring that the most up-to-date information is always available.

### HP Forum on CompuServe

The HP Systems Forum on CompuServe is an on-line service, accessible via modem. This service provides information about your HP PC, and allows you to communicate with other HP users through an on-line user forum. HP users share their knowledge and experience with you, and you will be able to ask, or answer, technical questions about your HP Vectra PC, and HP products.

You can also download the latest versions of drivers, BIOS and software utilities for HP Vectra PCs.

As a preferred Hewlett Packard customer, you are invited to join CompuServe at no initial charge.

For the United States and the United Kingdom, call the number shown below and ask for representative 51. For all other locations, first call the worldwide number to obtain the number of your local sales office, then call your local sales office and ask for representative 51.

Country	Local Call / Freephone Number	Direct Number
United States	1 (800) 848-8199	+1 (614) 529-1349
United Kingdom	(0800) 289378	+44 (1272) 760680
Worldwide	—	+1 (614) 529-1349

CompuServe will send you a free introductory membership immediately, including information on how to access CompuServe.

At the CompuServe ! prompt, type **GO HP**.

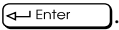
#### 4 Hewlett Packard Support and Information Services

Hewlett-Packard Information Services

##### HP Forum on America Online

The HP Forum on America Online is an electronic information and communication service which can be accessed via modem.

To access the HP Forum:

- select **Keyword Search** from the menu,
- type **HP**,
- press .

This will load the HP Home Page directly onto your screen.

In the HP Forum you can ask and answer questions about HP products and you can also download drivers, software application notes, or utilities for HP products.

Membership information can be obtained by calling 1(800) 827-6364, giving the preferred customer number 1118.

### HP BBS Library

The HP electronic bulletin board library service contains the latest versions of drivers, BIOS, and utilities, which you can download to your PC using a modem. Support documentation is also available.

Country	Number	Baud Rate
United States	+ 1 (208) 344-1691	300, 1200, 2400, 4800, 9600, 14400
United Kingdom	+ 44 (1344) 3600880	up to 14400
Worldwide	+ 1 (208) 344-1691	300, 1200, 2400, 4800, 9600, 14400

Set your modem for no parity, 8 data bits, and 1 stop bit (N, 8, 1).

### HP World Wide Web Site

The HP World Wide Web site gives you access to information about HP, its products, including product data sheets, service and support information, electronic newsletters and technical tips. You can also download the latest versions of drivers, BIOS and software utilities.

The Access Guide Directory guides you through the information and services available.

**World-Wide Web URL**

<http://www.hp.com>

#### 4 Hewlett Packard Support and Information Services

Hewlett-Packard Information Services

##### HP FAXback on Demand—HP FIRST

HP FIRST is a service where you can select documents, support and technical information, data sheets and pre-sales information, which are then faxed to you. To access this service, you can use a touch-tone phone and have the fax sent to the fax machine of your choice, or use the handset on your fax machine and dial one of the numbers given below:

Country/Region	Number	Access Method
United States	1 (800) 333-1917	Phone or fax
U.K.	(0800) 960271	Phone or fax
Australia	+ 61 (3) 9272-2627	Phone or fax
Singapore	+ 65 291-7951	Phone or fax
Hong Kong	+ 852 2506-2422	Phone or fax
New Zealand	+ 64 (9) 356-6642	Phone or fax
Europe	+ 31 (20) 681-5792	Phone or fax
Worldwide	+ 1 (208) 344-4809	Fax

A complete description of Hewlett-Packard electronic services is provided in document #9020.

##### HP Audio Tips (USA only) HP Automated Support Directory

HP Audio Tips is an automated system containing recordings which can direct you to Hewlett Packard support services. Live support is not available through this service.

Dial 1 (800) 333-1917 and press 3, to access HP Audio Tips.

## Ordering Drivers and BIOS on Diskette

You can order diskettes from HP, with the latest versions of drivers, BIOS and software utilities. The diskettes will be delivered by mail.

Information for ordering diskettes is set out in the table below:

North and Latin America	Europe
Phone +1 (970) 339 7009 Monday - Saturday 24 hours per day	Phone +44 (1429) 865511 Monday - Friday 8.30 a.m. - 6.00 p.m. Central European Time
Fax +1 (970) 330 7655	Fax +44 (1429) 866000
Mail US Driver Fulfillment for Hewlett-Packard PO Box 1754, Greeley, Colorado 80632 USA	Mail European Fulfillment for Hewlett-Packard c/o StarPak International, Ltd., Hartlepool, Cleveland, TS25 2YP United Kingdom

Australia	Asia - Pacific
Phone + 61 (2) 565 6099 Monday - Friday 8.30 a.m. - 5.30 p.m. Australian Eastern Time	Phone + 65 740 4477 Monday - Friday 8.30 a.m. - 5.30 p.m. Singapore Time
Fax + 61 (2) 519 5631	Fax + 65 740 4499
Mail Fulfill: Plus Pty Ltd., Private Bag 75, Alexandria NSW Australia 2015	Mail Fulfill: Plus Pte Ltd., No 51, Ubi Ave. 3, Singapore 1440

To identify a specific BIOS, driver or utility for your PC, please follow the steps listed below prior to placing your order.

- Contact your authorized HP reseller for assistance in selecting the appropriate driver.
- If your reseller is unable to help you, call HP FIRST for the most up-to-date list of drivers.

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## HP Support Services

Hewlett-Packard provides a three year hardware warranty which includes on-site service during the first year after purchase, and a return service during the second and third years after purchase. This warranty coverage will apply from the nearest HP or HP authorized service outlet.

HP telephone support for your Vectra PC is available during the first year of your hardware warranty. This service will also provide technical assistance with the basic configuration and setup of your Vectra PC and for the bundled or pre-loaded operating system.

Lifeline Telephone support is available during the second and third years of hardware warranty, via the Lifeline program, which is a fee-based service.

HP does NOT provide support for Vectra PCs configured as network servers. We recommend HP NetServers for your network server requirements.

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### ***NOTE***

Reloading the software bundled or pre-loaded on your PC is not covered by the HP three-year warranty.  
For your bundled application, HP recommends that you keep the master CD-ROM.

Your HP authorized reseller offers various service contracts which can be tailored to your particular support needs.



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## Hewlett-Packard Telephone Support

### HP North American Customer Support Center

Assistance from the HP North American Customer Support Center is available Monday to Friday, 7:00 am to 6:00 pm Mountain time.

The number is: +1 (970) 635-1000

### HP European Customer Support Center

Assistance from the HP European Customer Support Center is available Monday to Friday, 8:30 am to 6:00 pm Central European time.<sup>1</sup>

Country <sup>1</sup>	Language	Local Number
United Kingdom	English	0171 512 5202
Ireland	English	01 662 5525
Netherlands	Dutch	020 606 8751
Belgium	Dutch	02 626 8806
	French	02 626 8807
Switzerland	French	084 880 1111
	German	084 880 1111
Germany	German	0180 525 8143
France	French	04 50 43 9853
Austria	German	0660 6386
Norway	Norwegian	22 11 6299
Denmark	Danish	3929 4099
Sweden	Swedish	08 619 2170
Italy	Italian	02 26410350
Spain	Spanish	902 321 123
Portugal	Portuguese	01 441 7199

1. For non-listed European countries, support is available in English by calling +44 171 512 5202.

#### 4 Hewlett Packard Support and Information Services

##### Lifeline Telephone Support

Please have the following information ready when you call so that your enquiry can be dealt with quickly:

- your HP Vectra model number and serial number
- the operating system version and the configuration
- a description of the software installed and the accessories used.

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### Lifeline Telephone Support

Lifeline is a fee-based telephone support program for Vectra PCs available after the one-year telephone support provided as part of the hardware warranty has expired.

Your call can either be charged to your phone bill at a per minute rate or to your credit card (Visa, Mastercard or American Express) at a flat fee.

The charge begins AFTER you have been put in contact with a support technician. If your problem is found to be covered by the HP Hardware Warranty, no charge will be applied.

In the US please call the appropriate number listed below.

Number	Method of Payment	Charge Type
1 (900) 555-1500	Charged to phone bill	per minute rate
1 (800) 999-1148	Charged to credit card	Flat fee

In Europe, please call the telephone support center (+44 171 512 5202).

Free access to HP information services is not affected by this service. You are encouraged to access HP Information Services throughout the life of your PC, whether in or out of warranty.

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## HP Network Phone-in Support Service (NPS)

The HP Network Phone-in Support Service (NPS) provides fast access to HP experts in networked Multivendor environments.

It can help you to:

- resolve complex network problems,
- leverage HP's alliances with leading Network Operating Systems and Network manufacturers,
- support your HP and non-HP products with a single telephone call,
- increase network uptime.

You can purchase the HP NPS service as an annual contract, billable in advance annually, bi-annually, quarterly, or at an hourly rate. This contract service provides unlimited toll-free access to HP Response Center Engineers (RCEs).

To obtain an HP NPS contract, contact your HP authorized reseller, or if you are in the US call (800) 437-9140.

## 4 Hewlett Packard Support and Information Services

### Summary

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## Summary

The table below summarizes the services and support available from HP or authorized resellers.

Service	Covers	Period covered	Response time	Fee	When available	Purchase from
<b>Basic Warranty</b>	Parts and labor for HP products: first year on-site, second and third year return to HP.	Three years from date of purchase.	Next working day for on-site.	No charge.	At time of purchase.	HP.
<b>HP SupportPack on-site service</b>	Parts and labor for HP products.	First three years.	Next working day.	One fee which covers the three years.	Within 30 days of purchase.	HP Authorized reseller.
<b>HP Support Assistant</b>	CD-ROM containing: Product Manuals, Technical Information and Product features.	Released quarterly.	N/A	Annual subscription.	Anytime.	HP.
<b>Electronic services</b>	Technical information, drivers, utilities, tools and diagnostics.	Anytime.	24-hour access.	No charge.	Anytime.	HP BBS, WWW, CompuServe, America Online.
<b>Technical Phone support</b>	Basic assistance for PC setup, configuration, start-up and hardware diagnosis.	First year.	Business hours.	No charge.	At time of purchase.	HP.
<b>Lifeline phone support</b>	Basic assistance for PC setup, configuration, start-up and hardware diagnosis.	After first year.	Business hours.	Per-call fee, no time limit.	Anytime after first year.	HP.
<b>HP Network Phone-in support</b>	Advanced remote technical support for multivendor networked environments.	Annual contract.	Business hours: 24-hour/ 7-day service also available.	Annual fee, or minimum fee per incident.	Anytime.	HP Authorized reseller.
<b>Service Contracts</b>	Technical Support.	Customer defined.	As required.	Annual fee, or fee per incident.	Anytime.	Reseller.

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## Hewlett-Packard Marketing Headquarters

Should you wish to contact Hewlett-Packard, check your local telephone directory for the HP Sales and Service Office near you. If you cannot find a convenient HP office, you can write to one of the major HP Sales and Service Offices or one of the Worldwide Marketing Headquarters listed here.

### ASIA

Far East Sales Region Hdqtrs  
Hewlett-Packard Asia Ltd.  
22/F Peregrine Tower  
Lipp Centre  
89 Queensway, Central  
Hong Kong

### Hewlett-Packard LATIN AMERICA

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6877 Goreway Drive  
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Ontario L4V 1M8  
Canada

#### **4 Hewlett Packard Support and Information Services**

Hewlett-Packard Marketing Headquarters

# Glossary

**100Base-T** Refers to the 100 Mbit/s network technology over category 5 UTP (Unshielded twisted pair) cable that is compatible with the proposed IEEE 802.3 standard. This technology, which takes the CSMA/CD protocol to 100 MBits/s operation, is also referred to as 802.3u or Fast Ethernet.

**100VG-AnyLAN** Refers to the 100 Mbit/s network technology over voice grade cable that is compatible with the proposed IEEE 802.12 standard. This technology guarantees access to any end node that requests to transmit, while ensuring priority access to end nodes that require consistent, continuous access for applications such as full-motion video or video conferencing.

**adapter** An accessory board, that connects to the system board via an accessory board slot.

**BBS** Bulletin Board System. A computer that uses a modem and software to serve as an information source for other computers equipped with a modem. Hewlett-Packard has a BBS that can be reached at +1 (408) 553-3500.

**BIOS** Basic Input-Output System. Software that provides an interface between the computer hardware and the operating system.

**bus** An electrical connection over which information is transported.

**cache** A block of high-speed memory

used for the temporary storage of data and processor instructions.

**CD-ROM** Compact Disc Read Only Memory. A mass storage device that uses compact disc technology. CDs can store data, but most cannot be written to.

**CMF** Filename extension for sound files saved in the Creative Labs, Inc. music data file format.

**CMOS** Complementary Metal-Oxide Semiconductor memory requires very little power to operate. The contents of your computer's CMOS memory are preserved when you turn off the computer. It is used to store information that must be maintained, such as your computer's configuration.

**Color map** The color options in a graphics system, arranged by index number. Typically, the system has a default color map. The index of colors in the color map can be reallocated, depending on the application. There is one color map in the hardware (often called a color lookup table), but many color maps can be allocated in software and indexed as appropriate for separate applications.

**controller** A device that enables another device (such as a hard disk) to communicate with the computer.

**device driver** Software that enables the computer to interface with a specific peripheral, such as a printer or display.

## Glossary

**Double buffering** The process of using two frame buffers for smooth animation. Graphical contents of one frame buffer are displayed while updates occur on the other buffer. When the updates are complete, the buffers are switched. Only complete images are displayed, and the process of drawing is not shown. The result is the appearance of smooth animation.

**DIMM** Dual In-line Memory Module. These memory modules provide a 64-bit data path for improved system performance.

**DSP** Digital Signal Processor.

**ECC** Error Correcting Code can detect and correct data errors in memory modules.

**Eight-bit color** The color range possible with an eight-bit graphics system. Each pixel in an 8-bit system can display one of 256 colors (28) at any given time. These colors are typically obtained from a color map.

**expansion slot** A slot inside the computer, connected to the system board, that can be used for accessory boards.

**extended memory** Memory which can be addressed by the processor in the area of memory above the first 1 MB.

**Frame buffer** Display memory that temporarily stores (buffers) a full frame of picture data at one time. Frame buffers are composed of arrays

of bit values that correspond to the display's pixels. The number of bits per pixel in the frame buffer determines the complexity of images that can be displayed.

**Graphical user interface (GUI)** The graphical user interface (GUI) provides the user with a method of interacting with the computer and its special applications, usually via a mouse or another selection device. The GUI usually includes such things as windows, an intuitive method of manipulating directories and files, and icons.

**IDE** Integrated Device Electronics. An interface standard for communications between the computer and a hard disk or CD-ROM.

**IRQ** Interrupt Request. A signal, that when received by the processor, halts the current process and allows a different task to be undertaken.

**jumper** An electrically-conductive part that is used to connect two or more points on a circuit board. Commonly used to select configuration options.

**LAN** Local Area Network. A general-purpose communications network that interconnects a variety of devices within a limited geographical area. A LAN might connect computers on adjacent desks, within a building, or within several buildings of a campus.

**Mapping** The transformation of one coordinate system into another. In the



## Glossary

3-D viewing pipeline, for instance, an object is defined by the application developer in model coordinates; these are mapped to world coordinates, the world coordinates are mapped to normalized device coordinates (NDCs); the NDCs are mapped to device coordinates; and the final picture is displayed. Also, an application for computer graphics systems. See geographic mapping, and geographic information systems.

**mass storage** Any device used to store large amounts of data. Usually refers to hard disks and tape backup units.

**memory modules** Miniature boards containing memory chips. Used for increasing the amount of memory available in the computer.

**MID files** Standard file format used to store MIDI sequence information.

**MIDI** Musical Instrument Digital Interface. An international hardware/software standard that specifies the cable and hardware interface that allows several devices, instruments, and computers to interchange music codes and events.

**multimedia** Combining static media (such as text and pictures) with dynamic data (such as sound, video, and animation) on the same system.

**network server mode** A security feature that prevents unauthorized use of an input device (like a keyboard or mouse) while your

computer is running as an unattended network server.

**OLE** Object Linking and Embedding. A Windows feature that allows different object types (such as speech clips or notes of music) to appear in a document. The objects can be linked, in which case they remain separate files, or embedded, where they become a part of the document.

**OpenGL** A distributed version (with license) of Silicon Graphics' Graphics Language (GL), which is a collection of program functions combined into an API.

**pixel** Picture element. The smallest addressable spot on the screen.

**Plug and Play** Plug and Play is an architecture designed to simplify installation and configuration of new devices in a PC.

**POST** Power-On Self-Test. A series of tests your computer performs when you switch the computer on.

**RAM** Random Access Memory. This memory is used to hold programs and data temporarily.

**resolution** A measure of the visible detail on a screen or printout. Screen resolution is measured in 'pixels across' by 'pixels down' by 'number of colors'. Printer resolution is measured in dpi (dots-per-inch).

## Glossary

**ROM** Read-Only Memory. Computer memory used to store parts of the computer's operating system permanently. ROM chips can contain instructions and data.

**SCAM** SCSI Configured Automatically. A protocol which automatically assigns device IDs to SCSI devices which support SCAM.

**SCSI** Small Computer System Interface. A high-speed data bus used for connecting hard disks, tape drives, and other accessories to your computer.

**SCSI chain** Devices connected on a single SCSI bus.

**Setup program** Used to inform the computer about its configuration, for example the amount of memory installed. The setup program is stored in ROM on the system board.

**shadow RAM** A method of relocating the system and/or video BIOS from slower ROM chips to faster RAM to improve system performance.

**SIMM** Single In-line Memory Module. These memory modules can provide a 32-bit data path.

**Sound files** Files containing sound data. Sound files are usually stored in one of four formats, with the extension .WAV, .MID, .VOC, or .CMF.

**terminator** A resistor at the end of a SCSI cable that prevents the signal

from reflecting back along the cable.

**True color** Also known as RGB color or 24-bit color. True color graphics systems are usually equipped with at least 24 bits per pixel. In the 24-bit system, for instance, three primary colors in the color graphics system—red, green and blue—are allotted 8 bits each. There are 28, or 256 intensities each for red, green and blue. This translates to a total palette range of 16.7 million colors (256 x 256 x 256). Because the human eye cannot detect the subtlety available in a palette of 16.7 million colors, this range makes it possible to compute what appears to be gradual shading.

**video controller** A chip or expansion card which converts signals in the computer into displayable signals.

**video RAM** Memory that enables or speeds up drawing to the screen or increases resolution or color options.

**VOC files** Proprietary digital audio format developed by Creative Labs, Inc. Most digital audio adheres to the Microsoft WAV format.

**WAV files** A Microsoft file format for storing digital audio data.

**Windows RAM (WRAM)** Dual-ported memory, which allows for simultaneous input of data from the graphics controller and output of data to the display.

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# Index

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## Numerics

- 100BaseT
  - defined, 77
- 100VG-AnyLAN
  - defined, 77

## A

- accessories
  - installing, 15-??
- accessory board
  - installing, 32
  - problems, 50
- Accessory boards, configuring in Windows 3.11, 32
- After installing a video memory upgrade on the MGA video adapter, 22
- After installing video memory upgrade on MGA video adapter, 22
- air flow guide, 18
- America Online
  - HP Forum, 66
- audio
  - connectors, 5
  - problems, 53

## B

- BBS
  - defined, 77
- BBS library
  - access numbers, 67
- BIOS
  - defined, 77
  - obtaining via HP BBS, 67
  - obtaining via World Wide Web, 67
  - ordering by mail, 69
  - updating video BIOS, 24
- bus
  - defined, 77

## C

- cables
  - keyboard, 3
- cache
  - defined, 77
- CD-ROM drive
  - defined, 77
  - installing, 30
- CD-ROM drive, does not work, 49

- Changing the battery, 55
- CMOS
  - defined, 77
- color map, 77
- CompuServe
  - free introductory membership, 65
  - HP forum, 65
- connecting
  - display, 3
  - keyboard, 3
  - power cables, 6
- connectors
  - audio, 5
  - headphones, 5
  - microphone, 5
  - MIDI, 5
- cover
  - replacing, 17
- cover, removing, 17
- creating master diskettes, 10

## D

- device driver
  - defined, 77
- DIMM
  - defined, 78
- display
  - connecting, 3
  - screen
    - brightness, 9
- display, screen contrast, 9
- DMA Channels
  - used by the PC, 59
- double buffering, 78
- drivers
  - obtaining via HP BBS, 67
  - obtaining via World Wide Web, 67
  - ordering by mail, 69

## E

- ECC
  - defined, 78
- eight-bit color, 78
- error message, 41

## F

- flexible disk drive

- installing, 30
- problems, 47
- frame buffer, 78

## G

- glossary, 77
- graphical user interface, 78

## H

- hard disk
  - problems, 48
- headphones jack
  - location of connector, 5
- Hewlett-Packard
  - BBS library, 67
  - information services, 65
  - marketing headquarters, 75
  - support and information services, 61
  - World Wide Web access, 67
- HP Forum
  - on America Online, 66
  - on CompuServe, 65
- HP Setup program, 60
- HP Summary screen, 60

## I

- I/O addresses
  - used by the PC, 59
- IDE drives, 25
  - installing, 28
  - replacing, 28
- information services, 65
- Initializing
  - software, 8
- Installing
  - main memory, 19
  - memory, 19
  - video memory upgrade, 21
- installing
  - accessories, 15-??
  - accessory boards, 32
  - CD-ROM drive, 30
  - flexible disk drive, 30
  - IDE drives, 28
  - mass storage devices, 25
  - processor upgrade, 35
  - tape drive, 30
  - video memory, 21

---

# Index

---

Installing memory, 19  
Interrupt Request Channels  
    used by the PC, 59

**J**  
jumper location, 57

**K**  
keyboard  
    connecting, 3  
keyboard, problems, 45

**L**  
LAN  
    defined, 78  
LINE IN jack  
    location of connector, 5  
LINE OUT jack  
    location of connector, 5

**M**  
mapping, 78  
mass storage devices  
    connectors, 25  
    installing, 25  
master diskettes  
    creating, 10  
Memory  
    installing, 19  
memory  
    installing main memory, 20  
    installing video memory, 21  
microphone  
    location of connector, 5  
MIDI  
    connector, 5  
    defined, 79  
modem, start from, 41  
mouse  
    problems, 45

**N**  
network  
    defined, 78  
    telephone support, 73

**O**  
OpenGL, 79

**P**  
password  
    setting, 11  
PC  
    starting, 7  
    starting for the first time, 8  
    stopping, 10  
PC, unpacking, 2  
Plug and Play  
    defined, 79  
power cables, connecting, 6  
Power-On Self-Test  
    screen, 8  
printer  
    problems, 46  
problems  
    with accessory board, 50  
    with software, 51  
    with the audio interface, 53  
    with the flexible disk drive, 47  
    with the hard disk, 48  
    with the printer, 46  
processor upgrade  
    installing, 35

**R**  
removing the cover, 17  
replacing  
    IDE drives, 28  
Replacing cover, 17

**S**  
SCAM  
    defined, 80  
SCSI  
    defined, 80  
setting  
    passwords, 11  
Setup program, 60  
software  
    initializing, 8  
    license agreement, 9  
    master diskettes, 10  
    problems, 51  
start from modem, 41  
starting  
    PC, 7  
    PC for the first time, 8

Starting and Stopping Your PC, 7  
stopping  
    PC, 10  
Summary screen, 60  
support  
    by telephone, 71, 72  
    information services, 61  
    Network Phone-in Support, 73  
    summary of services, 74  
Support Assistant  
    ordering information, 64  
switch location, 57  
System board, 57  
system board, 57  
    jumper location, 57  
    switch location, 57  
System board, switches, 57

**T**  
tape drive, installing, 30  
telephone support  
    for networks, 73  
    out of warranty, 72  
    under warranty, 71  
tools required for installation, 2  
troubleshooting, 37  
true color, 80

**U**  
unpacking the PC, 2  
URL  
    for HP World Wide Web site, 67

**V**  
video board  
    flash BIOS, 24  
video memory modules  
    installing, 21

**W**  
World Wide Web  
    access to HP, 67

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## Regulatory Information and Warranty

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## Regulatory Information

DECLARATION OF CONFORMITY  
according to ISO/IEC Guide 22 and EN 45014

**Manufacturer's Name:** HEWLETT-PACKARD

**Manufacturer's Address:** 5 Avenue raymond Chanas  
38320 Eybens, FRANCE

**Declares that the product:**

**Product Name:** Personal Computer  
**Model Number:** HP Vectra VL 5/xxx, Series 5  
Models DT and MT

**Conforms to the following Product Specifications:**

<u>SAFETY</u>	International: IEC 950: 1991 + A1 + A2 + A3 Europe: EN 60950: 1992 + A1 + A2 EN 60825-1994
<u>EMC</u>	CISPR 22: 1993 /EN 55022: 1994 Class B EN 50082-1: 1992 IEC 801-2: 1992 / prEN 55024-2: 1992 - 4 kV CD, 8 kV AD IEC 801-3: 1984 / prEN 55024-3: 1991 - 3 V/m IEC 801-4: 1988 / prEN 55024-4: 1992 - 0.5 kV Signal Lines, 1 kV Power Lines  IEC 555-2:1982 + A1:1985 / EN 60555-2:1987 IEC 1000-3-3:1994 / EN 61000-3-3:1995

**Supplementary information:** The product herewith complies with the requirements of the EMC Directive 89/336/EEC amended by Directive 93/68/EEC and the Low Voltage Directive 73/23/EEC, and carries the CE marking accordingly.



**Grenoble**  
January 1997

Jean-Marc JULIA  
Product Quality Manager

## **FCC (for USA only)**

### **Federal Communications Commission Radio Frequency Interference Statement**

#### **Warning:**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna
- increase the separation between the equipment and the receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help.

Hewlett-Packard's FCC Compliance Tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your system. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

## **Notice for Canada**

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## **Safety Warning for the USA and Canada**

If the power cord is not supplied with the computer, select the proper power cord according to your local national electric code.

**USA:** use a UL listed type SVT or SJT detachable power cord.

**Canada:** use a CSA certified detachable power cord.

For your safety, never remove the PC's cover without first removing the power cord and any connection to a telecommunication network. Always replace the cover before switching on again.

Si le cordon secteur n'est pas livré avec votre ordinateur, utiliser un cordon secteur en accord avec votre code électrique national.

**USA:** utiliser un cordon secteur "UL listed", de type SVT ou SJT.

**Canada:** utiliser un cordon secteur certifié CSA.

Pour votre sécurité, ne jamais retirer le capot de l'ordinateur sans avoir préalablement débranché le cordon secteur et toute connexion à un réseau de télécommunication. N'oubliez pas de replacer le capot avant de rebrancher le cordon secteur.

## **Changing a battery**

There is a danger of explosion if the battery is incorrectly installed. For your safety, never attempt to recharge, disassemble or burn the old battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. The battery in this PC is a lithium battery which does not contain heavy metals, nevertheless, in order to protect the environment, do not dispose of batteries in household waste. Please return used batteries to the shop from which you bought them, to the dealer from whom you purchased the PC, or to Hewlett Packard, so that they can either be recycled or disposed of in an environmentally sound way. Returned used batteries will be accepted free of charge.



Bij dit apparaat zijn batterijen geleverd. Wanneer deze leeg zijn, moet U ze niet weggooien maar inleveren als KCA.

## **Changement de la pile**

Il y a danger d'explosion lorsque la pile n'est pas installée correctement. Pour votre sécurité, ne jamais essayer de recharger, de démonter ou de brûler l'ancienne pile. Remplacer uniquement avec une pile du même type ou d'un type équivalent recommandé par HP. La pile de cet ordinateur est une pile au lithium qui ne contient pas de métaux lourds, néanmoins, afin de protéger l'environnement, il ne faut pas la jeter dans les ordures ménagères mais la rendre au magasin où vous l'avez achetée, ou revendeur où vous avez acheté l'ordinateur, ou à Hewlett Packard, pour qu'elle soit recyclée, ou stockée de manière qui ne nuit pas à l'environnement. Les piles usées seront acceptées gratuitement.

## Notice for the United Kingdom

The HP Vectra PC is approved under approval number NS/G/1234/J/100003 for indirect connection to Public Telecommunication Systems within the United Kingdom.

### Noise Declaration for Germany

Lärmangabe nach Maschinenlärmverordnung - 3 GSGV (Deutschland)  
LpA < 70 db am Arbeitsplatz normaler Betrieb nach EN27779: 11.92.

### Notice for Japan

この装置は、第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

### Notice for Korea

이 기기는 비업무용으로 전자파장애검정을 받은 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.



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## **HP Hardware Warranty**

**Important: This is your hardware product warranty statement. Please, read it carefully.**

**Warranty terms may be different in your country. If so, your Authorized HP Dealer or Hewlett-Packard Sales and Service Office can give you details.**

### **Three Year Limited Hardware Warranty**

Hewlett-Packard (HP) warrants this hardware product against defects in materials and workmanship for a period of three years from receipt by the original end-user purchaser.

The three year warranty includes on-site service during the first year of use, and return service provided by an HP Service Center or a participating Authorized HP Personal Computer Dealer Repair Center, during the second and third years of use.

If HP receives notice of above defined defects during the warranty period, HP will either, at its option, repair or replace products which prove to be defective.

Should HP be unable to repair or replace the product within a reasonable amount of time, the customer's alternate exclusive remedy shall be a refund of the purchase price upon return of the product.

### **Limitation of Warranty**

The above warranty shall not apply to defects resulting from: misuse; unauthorized modification; operation or storage outside the environmental specifications for the product; in-transit damage; improper maintenance; or defects resulting from use of non-HP software, accessories, media, supplies, consumables, or such items not designed for use with the product.

HP makes no other express warranty, whether written or oral, with respect to this product. Any implied warranty of merchantability or fitness is limited to the three-year duration of this written warranty. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state, or province to province.

### **Limitation of Liability and Remedies**

The remedies provided above are the customer's sole and exclusive remedies. In no event shall HP be liable for any direct, indirect, special, incidental, or consequential damages, whether based on warranty, contract, tort, or any other legal theory.

The foregoing limitation of liability shall not apply in the event that any HP product sold hereunder is determined by a court of competent jurisdiction to be defective and to have directly caused bodily injury, death, or property damage; provided, that in no event shall HP's liability for property damage exceed the greater of \$50,000 or the purchase price of the specific product that caused such damage. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages—including lost profit—so the above limitation or exclusion may not apply to you.

### **Obtaining On-Site Warranty Service**

To obtain on-site warranty service, the customer must contact an HP Sales and Service Office (in the US, call the HP Customer Support Center at (303) 635-1000) or a participating Authorized HP Personal Computer Dealer Repair Center. The customer must be prepared to supply proof of the purchase date.

This warranty is extended worldwide under certain conditions ( please, check with your local HP office) to products purchased from HP or an Authorized HP Personal Computer Dealer which are reshipped by the original purchaser either for use by the original purchaser or provided as an incidental part of systems integrated by the original purchaser. When available in the country of use, service is provided in the same manner as if the product was purchased in this country and can only be provided in countries where the product is designed to operate. If the product is not normally sold by HP in the country of use, it must be returned to the country of purchase for service. Response time for on-site service, and turn-around time for return service, are subject to changes from standard conditions based upon non-local parts availability.

The system processor unit, keyboard, mouse, and Hewlett-Packard accessories inside the system processor unit—such as video adapters, mass storage devices, and interface controllers—are covered by this warranty.

Customer-replaceable components may be serviced through expedited part shipment. In this event, HP will prepay shipping charges, duty, and taxes; provide telephone assistance on replacement of the component when necessary; and pay shipping charges, duty, and taxes for any part that HP asks to be returned.

HP products external to the system processor unit—such as external storage subsystems, displays, printers, and other peripherals—are covered by the applicable warranties for those products; HP software is covered by the HP Software Product Limited Warranty.

On-site visits caused by non-Hewlett-Packard products—whether internal or external to the system processor unit—are subject to standard per-incident travel and labor charges.

On-site service for this product is restricted or unavailable in certain locations. In HP Excluded Travel Areas—areas where geographical obstacles, undeveloped roads, or unsuitable public transportation prohibit routine travel—service is provided on a negotiated basis at extra charge.

Response time for HP on-site service in an HP Service Travel Area is normally next business day (excluding HP holidays) for HP Travel Zones 1-3 (generally 100 miles or 160 Km from the HP office). Response time is second business day for Zones 4 and 5 (200 miles, 320 Km); third business day for Zone 6 (300 miles, 480 Km); and negotiated beyond Zone 6. Worldwide Customer Support Travel information is available from any HP Sales and Service Office.

Travel restrictions and response time for dealer or distributor service are defined by the participating dealer or distributor.

Service contracts which provide after-hour or weekend coverage, faster response time, or service in an Excluded Travel Area are often available from HP, an authorized dealer, or authorized distributor at additional charge.

### **Customer Responsibilities**

The customer may be required to run HP-supplied diagnostic programs before an on-site visit or replacement part will be dispatched.

The customer is responsible for the security of its proprietary and confidential information and for maintaining a procedure external to the products for reconstruction of lost or altered files, data, or programs.

For on-site service, the customer must provide: access to the product; adequate working space and facilities within a reasonable distance of the product; access to and use of all information and facilities determined necessary by HP to service the product; and operating supplies and consumables such as the customer would use during normal operation.

When service is being performed on-site, a representative of the customer must be present at all times. The customer must state if the product is being used in an environment which poses a potential health hazard to repair personnel; HP or the servicing dealer may require that the product be maintained by customer personnel under direct HP or dealer supervision.

### **Obtaining Return Warranty Service**

When return warranty service applies, the product must be returned to a service facility designated by HP. Customer must enclose a copy of a document proving date of purchase.

The customer shall prepay shipping charges (and shall pay all duty and taxes) for products returned to HP for warranty service. HP shall pay for return of products to the customer except for products returned to the customer from another country.

HP products may contain remanufactured parts equivalent to new in performance or may have been subject to incidental use.

Rev. 20/11/96

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## HP Software Product License Agreement and Software & Product Limited Warranty

Your HP Vectra PC contains preinstalled software programs. Please read the Software License Agreement before proceeding.

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**PRODUCT RECOVERY CD-ROM.** If your computer was shipped with a product recovery CD-ROM: (i) The product recovery CD-ROM and/or support utility software may only be used for restoring the hard disk of the HP computer with which the product recovery CD-ROM was originally provided. (ii) The use of any operating system software by Microsoft contained in any such product recovery CD-ROM shall be governed by the Microsoft End User License Agreement (EULA).

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**UPDATES AND UPGRADES.** Customer agrees that the software does not include updates and upgrades which may be available from Hewlett-Packard under a separate support agreement.

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**Ninety-Day Limited Software Warranty.** HP warrants for a period of NINETY (90) DAYS from the date of the purchase that the software product will execute its programming instructions when all files are properly installed. HP does not warrant that the software will be uninterrupted or error free. In the event that this software product fails to execute its programming instructions during the warranty period, Customer's remedy shall be a refund or repair. Should HP be unable to replace the media within a reasonable amount of time, Customer's alternate remedy shall be a refund of the purchase price upon return of the product and all copies.

**Removable Media (If supplied).** HP warrants the removable media, if supplied, upon which this product is recorded to be free from defects in materials and workmanship under normal use for a period of NINETY (90) DAYS from the date of purchase. In the event the media proves to be defective during the warranty period, Customer's remedy shall be to return the media to HP for replacement. Should HP be unable to replace the media within a reasonable amount of time, Customer's alternate remedy shall be a refund of the purchase price upon return of the product and destruction of all other non removable media copies of the software product.

**Notice of Warranty Claims.** Customer must notify HP in writing of any warranty claim not later than thirty (30) days after the expiration of the warranty period.

**Limitation of Warranty.** HP makes no other express warranty, whether written or oral with respect to this product. Any implied warranty of merchantability or fitness for a particular purpose is limited to the 90-day duration of this written warranty. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives specific legal rights, and you may also have other rights which vary from state to state, or province to province.

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**Obtaining Warranty Service.** Warranty service may be obtained from the nearest HP sales office or other location indicated in the owner's manual or service booklet.

Consumer transactions in Australia and the United Kingdom: The disclaimers and limitations above shall not apply and shall not affect the statutory rights of a Consumer.

(Rev. 19/11/96)

### Your HP Vectra PC Physical Characteristics

Characteristic	Description
Weight (excluding display and keyboard)	15 kg (33 pounds)
Dimensions	Width: 21 cm (8.27"), Height: 41.5 cm (16.34"), Depth: 40.5 cm (15.95")
Footprint	0.085 m <sup>2</sup> (0.91 ft <sup>2</sup> )
Storage temperature	-40 °C to 70° (-40 °F to 158 °F)
Storage humidity	8% to 80% (relative)
Operating temperature	5 °C to 40°C (40 °F to 104 °F)
Operating humidity	15% to 80% (relative)
Acoustic noise emission:	LW < 40 dBA
Power supply	Input voltage: 100 - 127 & 200 - 240 V ac Input frequency: 50/60 Hz
Maximum output power	160 W continous



**Paper not bleached with chlorine**

**Part Number D4570-90001  
Printed in USA 12/96**